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ABSTRACT

A 2-year study was conducted in 1965-67 for the following purposes: (1) to evaluate the materials and techniques of a new beginning reading program, Listen Look Learn (LLL) Multi-Media Communication Skills System, in order to make revisions where necessary and (2) to compare the LLL system in its formative stage with that of basal reader programs. Questionnaires and continuous feedback cards supplied to the teachers provided a detailed subjective evaluation of the materials and techniques. An objective evaluation was carried out during the second year by administering standardized tests to 570 pupils in 21 experimental classes taught reading by the LLL system and 627 pupils in 25 control classes which used the basal reader. Metropolitan Readiness Testing in September, 1966, showed no significant difference between the two groups. When the Metropolitan Achievement Tests, Primary I Battery, were administered in the spring of 1967, there was a significant difference favoring the experimental group on all subtests. Children with higher intelligence and greater readiness for reading were challenged by the LLL system and made greater achievement than similar children in the basal program. Tables are included. (DH)

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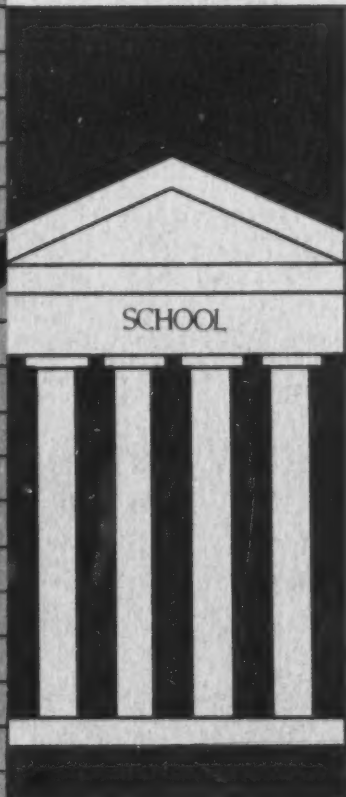
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Research Director

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Acknowledgment

Sincere gratitude is due to all those teachers and supervisors who joined in the cooperative LLL Research Program to refine and evaluate an instructional system of teaching beginning reading.

We are indebted most of all to the boys and girls who used our materials in their efforts to learn to read.

It is only by observing these children in their initial introduction to the world of print, as they used the instructional materials and techniques, that we could ascertain whether the *Listen Look Learn* system actually works with children in normal classroom settings.

Our sincere thanks go to everyone who joined in the exciting enterprise of developing the new system and of evaluating its potential for improving the teaching of beginning reading.

Contents

ACKNOWLEDGMENT	i
LIST OF TABLES	v
I. INTRODUCTION	
Background of the Study	1
Description of the Listen Look Learn Multi-Media Communication Skills System	2
Purpose of the Study	3
II. METHODS AND PROCEDURES OF THE STUDY	
Population	5
Teacher Experience and Training	8
Instructional Treatments Used	10
Implementation of the Experimental Program	10
Methods and Instruments of Evaluation	10
Methods of Analyzing Data	11
Methods of Reporting Data	11
III. RESULTS OF SUBJECTIVE EVALUATION	
LLL Teacher's Guide	13
Readiness Materials	14
Weston Woods Sound Filmstrip Library	15
Look and Write	16
Tach-X ABC Accuracy Filmstrip Set	17
Kinesthetic Activities	18
Readiness Worksheets	18
Controlled Reader Readiness Pictures	19
Stories and Experience Charts Composed By Children	19
Art Activities	20
Picture Sequence Cards	20
Hear and Hear & Read Games	21
Aud-X Readiness Lessons	22
Materials for Cycle Lessons	23
Perceptual Accuracy and Visual Efficiency	23
Building Experiences	24
Aud-X Lessons	24
Tach-X Word Recognition	32
Controlled Reader Processing Training	34
Controlled Reader Fluency Training	34
Guided Reading	36
Independent Reading	40
Related Language Arts	47
General Evaluations	49
IV. RESULTS OF OBJECTIVE EVALUATION	
Results for LLL and Control Groups	53
Organization of LLL Classes	61
Progress of LLL Classes	61
V. CONCLUSIONS AND SUMMARY	65

List of Tables

Table	Page
1. Pupils, Classes, and Socio-Economic Status of Classes 1965-1966 and 1966-1967	5
2. Participants and Locations of Projects Cooperating in Listen Look Learn Research Program During Formative Period, 1965-1967	6
3. Level of Formal Education of Teachers Participating in Research Program, 1966-1967	8
4. Semester Hours of Reading Methods and Children's Literature Courses for Teachers Participating in 1966-1967	9
5. Number of Years of Teaching Experience of LLL and Control Teachers, 1966-1967	9
6. Degree of Success and Evaluation of Components of the Pre-Reading Program Reported by Teachers Based Upon Use With Their Classes, 1965-1966.	15
7. Evaluation of Eye-Hand Coordination Instruction, 1965-1966	17
8. Strengths and Weaknesses of Aud-X Usage as Reported by Teachers, 1965-1966	26
9. Appropriateness of Aud-X Story Lessons for Fast, Middle, and Slow Groups as Reported by LLL Teachers, 1965-1966	28
10. Appropriateness of Aud-X Word Study Lessons for Fast, Middle, and Slow Groups as Reported by LLL Teachers, 1965-1966	29
11. Appropriateness of Aud-X Story and Word Study Lessons for Fast, Middle, and Slow Instructional Groups as Reported by LLL Teachers, 1965-1966	30
12. Number of Instructional Groups and Types of Supervision Needed During Aud-X Lessons, 1965-1966	31
13. Number of Teachers Reporting Reactions of Pupils to Carousel Library, Group A, 1966-1967	43
14. Number of Books Read by LLL Pupils as Reported by Teachers, 1966-1967	45
15. Comparison of Test Results for Total LLL and Control Groups, 1966-1967	54

Tables (continued)

Table	Page
16. Comparison of Test Results for Male Pupils in LLL and Control Groups, 1966-1967	55
17. Comparison of Test Results for Female Pupils in LLL and Control Groups, 1966-1967	55
18. Comparison of Test Results for Males and Females Within the Control Group, 1966-1967	56
19. Comparison of Test Results for Males and Females Within the LLL Group, 1966-1967	57
20. Comparison of Test Results for LLL and Control Pupils Having Readiness Scores in the Lower Three Deciles, 1966-1967	57
21. Comparison of Test Results for LLL and Control Pupils Having IQ Scores in the Lower Three Deciles, 1966-1967	58
22. Comparison of Test Results for LLL and Control Pupils Having IQ and Readiness Scores in the Lower Three Deciles, 1966-1967	58
23. Comparison of Test Results for LLL and Control Pupils Having Readiness Scores in the Upper Three Deciles, 1966-1967	59
24. Comparison of Test Results for LLL and Control Pupils Having IQ Scores in the Upper Three Deciles, 1966-1967	59
25. Comparison of Test Results for LLL and Control Pupils Having IQ and Readiness Scores in the Upper Three Deciles, 1966-1967	60
26. Summary of Significant Differences for Specific Groupings Comparing LLL Pupils with Control Pupils, 1966-1967	60
27. Organization of Classes with Respect to Number and Size of Groups Operating at Specific Cycles at the End of the School Year, 1966-1967	62
28. Ranges and Means of MAT Grade Equivalents According to LLL Cycles Completed, 1966-1967	63

I

INTRODUCTION

Background of the Study

New approaches to the teaching of reading are demanded by paradoxes of the day. Amid a great affluence of printed materials there live masses of functionally or totally illiterate people. In a world requiring communication across languages and cultures, as well as in scientific, mathematical, and computer terminology, students are dropping out of school with little facility in the standard language of their society. Children's books of every interest have swelled the libraries of schools and cities, but a disturbing number of pupils in the reading classes of our nation are unable to read them.

Reading and writing have traditionally been designated as necessary communication skills to be taught in school. Modern educators have recognized the value of teaching speaking and listening as other skills of communication. More recently, research has revealed that perceptual inadequacy impedes reading, and so skill in looking must be added to the list of those used in communication. Further, it has become apparent that the learning of each of the skills: reading, writing, speaking, listening, and looking, is enhanced by accompanying development of the others.

In addition, there is general agreement among authorities that reading instruction should be individualized to permit each child to learn at his own level and rate. Balancing the need for individualization, however, is the need for skill development that is sequential and controlled, but without the restrictions on vocabulary and content found today in conventional basal programs. Instruction in communication skills for today's child should develop independent learners who accept responsibility for their own learning, who are capable of self-direction, and who have a positive outlook toward learning.

Recent advances in publishing and educational technology combined with greater understandings of the teaching-learning processes have been utilized in developing a

new approach to the teaching of reading and the related communication skills. This new approach, called the *Listen Look Learn* Multi-Media Communication Skills System, has been developed by Educational Developmental Laboratories, Inc., a division of McGraw-Hill, Inc., and the L.W. Singer Company, a division of Random House, Inc. This systems approach organizes books, films, records, and instruments to function together for specific instructional purposes. The original version of instruments and materials for the *Listen Look Learn* (LLL) system was produced in 1965 and subjected to research and revision for two years, 1965-1967. This report is concerned with the outcome of that two-year study.

Description of the Listen Look Learn Multi-Media Communication Skills System

The *Listen Look Learn* (LLL) system of equipment and materials was designed to make it possible for the teacher to create a more effective teaching situation in which the child can learn to read and perform other acts of communication. The LLL system provides for and is dependent upon the interaction of teacher, pupil, materials and instruments in order to provide an efficient teaching-learning operation.

In creating the *Listen Look Learn* system, the following key considerations served as guidelines:

A multi-media approach is used (1) to allow instruction to be given by the specific medium or media deemed to be most appropriate for the teaching task, (2) to increase the amount of information that could be transmitted to the learner, (3) to extend the experiences of the child, and (4) to create a highly motivating and stimulating learning situation.

Multi-modes of learning are provided to allow individual children to capitalize upon a preferred way of learning while simultaneously encouraging them to develop proficiency in using additional modes.

Instruments are used to permit a greater amount of control over the development of perceptual skills.

Auto-instructional techniques are employed to expand the actual number of instructional hours for each pupil, thereby increasing the available learning time. These techniques involve the child more actively in the learning process by allowing individual responses to prepared questions or exercises, followed by immediate correction and/or reinforcement. Auto-instruction also enables the teacher to organize her class into a large number of small or individual instructional groups, which can then operate on several levels and at various rates simultaneously in the classroom. Such an organization allows the pupil to work at his appropriate level of instruction and to pace himself along a continuous line of progress.

Cycles of instruction provide mutually reinforcing experiences, each one a sequence of introduction, practice, application, evaluation, and extension activities designed to teach specific vocabulary, concepts, and skills.

Continuous evaluation and reinforcement in each cycle helps the child establish a habit of evaluating his work and assists the teacher in diagnosing problems and assessing progress.

Positive attitudes toward reading are enhanced by careful prior teaching of needed vocabulary and word attack skills in order to make reading a successful experience.

Lively, diversified content is used to capture the interest of children from various social, economic, and ethnic backgrounds.

Independence and individual performance in the learning situation is encouraged through the functioning of several groups working simultaneously on various auto-instructional and teacher-directed tasks.

The role of the teacher becomes that of a guidance counselor more than a teller of facts or a giver of directives because the auto-instructional techniques allow her to devote a larger portion of her attention to diagnosis, reinforcement, and extension.

The *Listen Look Learn* system to Cycle 40 is distinguished by four major stages of instruction, each having a distinctive organization and type of instruction. The Readiness Stages are organized into a minimum of twenty days of instruction designed to prepare the child for beginning reading.

The Pre-Reading Cycles, 1-3, are organized for twenty-one days of instruction during which the first twenty-six words are taught and reading experiences are provided. Also, during these cycles, some initial consonants are taught and structural endings are introduced.

Cycles 4-20 are organized into five-day cycles culminating with reading of a booklet at the end of each cycle. During this period additional vocabulary and initial consonants are taught along with the substitution process and the structural skills of adding endings and combining words into compound words.

During Cycles 21-40, the instructional period is shortened to four days per cycle. Specific stories and poetry sections for each cycle are provided in hard-bound anthologies. Independent reading is provided by the thirty Carousel Books. Besides the additional vocabulary taught during Cycles 21-40, consonants and consonant blends in initial and final positions are taught. Structural analysis taught during this period includes contractions, additional endings, and changing the root word for specific endings. Syllables are also introduced in this section of the system.

Additional cycles of the *Listen Look Learn* system are under development. Materials extending from Cycle 41 will be used in classrooms and subjected to similar formative research evaluation beginning in the fall of 1968. This report is concerned with only the Readiness Stages and Cycles 1-40 of the LLL system.

Purpose of the Study

This two-year research study was conducted in order to evaluate the materials and techniques of the *Listen Look Learn* Multi-Media Communication Skills System during the formative period of its development, determining the appropriateness of the materials and instruments for teaching reading to first-grade children, and identifying those components or segments of components which should be revised. The second purpose of the LLL Research Program was to compare the effectiveness of the LLL system, in its formative stage, with that of generally used basal reading programs.

II

METHODS AND PROCEDURES OF THE STUDY

Population

One thousand nine hundred seventeen first-grade pupils were involved in the two-year formative research program, 1965-1967, of the *Listen Look Learn* (LLL) system. The experimental group was comprised of 917 pupils in forty classes and the control group contained 1,000 pupils in forty-two classes. Middle, high, and low socio-economic levels were represented. Table 1 reports the total number of pupils and the number and socio-economic status of the classes in the research program.

TABLE 1
PUPILS, CLASSES, AND SOCIO-ECONOMIC STATUS OF CLASSES
1965-1966 AND 1966-1967

	Pupils		Classes		Socio-Economic Status of LLL Classes		
	LLL	Control	LLL	Control	High	Middle	Low
1965-1966	347	373	19	17	3	11	5
1966-1967	570	627	21	25	1	12	8
Total	917	1,000	40	42	4	23	13

The schools were located in eleven states representing each quadrant of the United States. Teachers and classrooms of pupils for both experimental and control situations were selected by the administration of the participating local school districts. Each school district was asked to provide teachers and pupils for the control situation that were as similar as practicable to those selected to use the *Listen Look Learn* system. Table 2 lists the location and educational personnel for each of the participating research installations.

TABLE 2
PARTICIPANTS AND LOCATIONS OF PROJECTS COOPERATING IN LISTEN LOOK LEARN
RESEARCH PROGRAM DURING FORMATIVE PERIOD, 1965-1967

Location	Supervisors	LLL Teachers	Control Teachers	School
CALIFORNIA				
Berkeley	Wells, Mr. Larry Wood, Mrs. Harriet	Tajima, Mrs. Jean	La Torres, Mrs. Carrie	Lincoln
Downey	Copeland, Mr. James* Emerson, Mr. Arthur*	Divine, Mrs. Corabelle Furman, Mrs. Mabelline*		Roger Casier
Richmond	Briggs, Miss Ina Martin, Miss Irene* Minor, Mr. John* Pence, Mrs. Helen*	Williams, Mrs. Thelma* Hayashi, Miss Ruth	Robison, Mrs. Mary* Rue, Mrs. Marilyn	Maude Price
			Brown, Miss Rosalind* Malone, Mrs. Mary*	Steger
			Hollinquest, Mrs. Irma Kollins, Mrs. Arlene	Pullman
CONNECTICUT				
Westport	Markel, Mrs. Ruth Metelits, Mr. Leonard	Fite, Miss Patricia	Hall, Mrs. Jessie	Burr Farms
GEORGIA				
Decatur	Carne, Mr. Vernon Christopher, Mr. David	Campbell, Mrs. Hilda McKenna, Miss Diane	Baker, Mrs. Linda Harper, Mrs. Clara McCurdy, Mrs. Linda	Hooper Alexander
IDAHO				
Preston	Brown, Mr. Wayne* Ward, Mr. William*	Boothe, Mrs. Ruby** McDermott, Mrs. Betty** Moser, Mrs. Marilou*		Central
ILLINOIS				
Chicago	Hansen, Mr. Earl* Robinson, Dr. H. Alan* Silber, Mr. Norman*	Fuller, Mrs. Jean** Nipson, Mrs. Velvin** Polk, Mrs. Dorothy Richardson, Miss Gardenia Solomon, Mrs. Joyce Tate, Mrs. Virginia Berke, Mrs. Eileen Larson, Miss Jane*	Erickson, Mrs. Wavel* Wright, Mrs. Ila*	Franklin Whitney
			Black, Mrs. Vergie Clark, Mrs. Beola* Spears, Miss Jessie	Walter Scott
Elk Grove Village	Anderson, Mrs. Christine*		Goodmonson, Mrs. Norma Weller, Miss Margaret	Mark Hopkins

MINNESOTA

Duluth

Nosek, Mrs. Mabel***
Olson, Mr. Donald
Swanberg, Mrs. Margaret*

Beglinger, Miss Susan

Boone, Mrs. Maureen
Pond, Mrs. Gloria S.
Mainella, Mrs. Cecilia

Emerson

Hays, Mrs. Katherine

Nosek, Mrs. Mabel

Jefferson
Franklin

NEW YORK

Manhasset

Collins, Dr. Raymond
Dixon, Dr. James

Reynolds, Mrs. Charlotte

Munsey Park

OREGON

Lake Oswego

Actor, Mr. Charles
Gillihan, Mr. Chester
Maney, Dr. James
Meyers, Dr. Kent*

Jongeward, Mrs. Janet**
Nelson, Mrs. Donna*
Onion, Miss Diana**

Bryant

Lakewood

Bales, Mrs. Mary
Dehner, Mrs. Christine
Sweet, Mrs. Jeanne
Thorne, Mrs. Katherine
Walton, Miss Gail
Campbell, Mrs. Jan
Haskens, Mrs. Nancy
Hysten, Mrs. Marion

Uplands

Lake Grove

UTAH

Kearns, Salt Lake City

Cummins, Mr. J. Kenneth
Reid, Dr. Ethna R.

Gladwell, Mrs. Toni
Peck, Mrs. Ida
Wrathall, Mrs. Eloise

South Kearns

Salt Lake City WASHINGTON

Seattle

Wilkinson, Mr. Maurice*
Everman, Mr. James
Dimmit, Mr. Mervyn
Warfield, Mrs. Bea*

Pardoe, Mrs. Phyllis*

Oquirrh Hills

Abraham, Mrs. Ila
Hemsley, Mrs. Martha
Shawcroft, Mrs. Ada
Hopkinson, Miss Jane*

Oakridge

None

Jackson, Mrs. Anne*

Beverly Park

WEST VIRGINIA

Belle

Anderson, Mrs. Lorena*
Bryant, Mrs. Louise*

Blackburn, Mrs. Nellie*

Bryant, Mrs. Wilma
Thompson, Mrs. Glema

Belle

*Indicates those people who participated in both 1965-66 and 1966-67.

**Indicates those who taught a control class in 1965-66 and an LLL class in 1966-67.

***Taught in the LLL program in 1965-66.

Teacher Experience and Training

The teachers in the 1966-67 LLL Research Program responded to a questionnaire regarding their professional training and teaching experience. Table 3 reports on the level of formal education achieved by the twenty-one teachers of LLL classes and the twenty-five teachers of the control classes. The LLL and control groups were approximately equal in the percentages of teachers who had a bachelor's degree and those who had some credits beyond a bachelor's degree but had not attained a master's degree. In the group that had a master's degree or more, there were three LLL teachers and two control teachers. None of the teachers had less than a bachelor's degree and none had obtained a doctor's degree. Two teachers in the control group did not respond.

TABLE 3
LEVEL OF FORMAL EDUCATION OF TEACHERS PARTICIPATING
IN RESEARCH PROGRAM, 1966-1967

Education	LLL		Control	
	Number of Teachers	Per Cent of Teachers	Number of Teachers	Per Cent of Teachers
Doctor's Degree	0	0	0	0
Master's Degree, plus	2	9	1	4
Master's Degree	1	5	1	4
Bachelor's Degree, plus	13	62	15	60
Bachelor's Degree	5	24	6	24
Less than Bachelor's Degree	0	0	0	0
No Answer	0	0	2	8
Total	21	100	25	100

Table 4 reports on the educational background of LLL and control teachers for teaching reading, according to semester hours of credit earned in courses of Reading Methods and Children's Literature. In the number of credit hours of Reading Methods courses, the LLL and control teachers were about equal except for the highest category. Only two LLL teachers, compared with five control teachers, had specialized to the extent of earning ten to eighteen semester hours in Reading Methods. In Children's Literature courses, the two groups of teachers were nearly equal except in the case of those who had taken only one course; three fewer LLL teachers than control teachers had earned one to three semester hours in studying Children's Literature.

TABLE 4
SEMESTER HOURS OF READING METHODS AND CHILDREN'S LITERATURE
COURSES FOR TEACHERS PARTICIPATING IN 1966-1967

Courses	Number of Teachers				No Response
	Semester Hours				
	0	1-3	4-9	10-18	
Reading Methods					
LLL Teachers	2	2	10	2	5
Control Teachers	2	3	9	5	6
Children's Literature					
LLL Teachers	2	11	5	0	3
Control Teachers	2	14	6	0	3

Comparisons of the number of years of total teaching experience and experience in teaching first grade for the two groups, LLL and control, is shown in Table 5. In regards to total teaching experience, the percentage of the two groups of teachers who had taught eleven or more years was about equal. The percentage of experimental and control teachers having taught ten or fewer years was also about even. Regarding the teachers' experience in teaching first grade, however, the similarities were not quite so close. The percentage of LLL teachers with eleven or more years of first-grade teaching experience was 33 per cent; the percentage for control teachers was 24 per cent. Of the teachers with ten or fewer years teaching first grade, percentages were: LLL teachers 67 per cent and control teachers 72 per cent. As far as teaching experience was concerned, the LLL and control teachers did not appear to be greatly dissimilar.

TABLE 5
NUMBER OF YEARS OF TEACHING EXPERIENCE
OF LLL AND CONTROL TEACHERS, 1966-1967

Years of Teaching	Total Teaching Experience				Years Teaching First Grade			
	LLL		Control		LLL		Control	
	Number of Teachers	Per Cent of Teachers	Number of Teachers	Per Cent of Teachers	Number of Teachers	Per Cent of Teachers	Number of Teachers	Per Cent of Teachers
More than 20 years	6	28	5	20	3	14	2	8
11 - 20	3	14	6	24	4	19	4	16
4 - 10	9	43	6	24	8	38	6	24
1-3	2	10	7	28	5	24	12	48
Less than 1 year	1	5	0	0	1	5	0	0
No Response	0	0	1	4	0	0	1	4
Total	21	100	25	100	21	100	25	100

Instructional Treatments Used

The experimental classes in all cases used the *Listen Look Learn* Multi-Media Communication Skills System produced by Educational Developmental Laboratories, Inc., and the L.W. Singer Company. They are identified as LLL classes.

The control classes used whatever basal materials were in use in the local school systems. During 1966-67 seven control classes used the *Reading for Meaning Series* published by Houghton Mifflin in 1963. Five control classes used the *Ginn Basic Reading Program*, Revised Edition. Thirteen control classes used Scott Foresman's *Curriculum Foundation Series*, Sixties edition; in at least three cases the Multi-Ethnic Edition was used. Some of the control classes used additional materials such as the *Phonovisual Method* published by Phonovisual Products, Inc., and the *Phonetic Keys Program* published by Economy Press. In this study all the groups using basal reading programs were grouped together and identified as control classes.

Implementation of the Experimental Program

Teachers and supervisors using the new LLL materials were given very brief orientations and relied heavily upon the published LLL *Teacher's Guide*. In addition they were invited to telephone the Research Coordinator, reversing the charges, at any time regarding any condition requiring clarification, or to discuss any aspect of the program. From time to time, telephone calls were made by the Research Coordinator to the projects to inquire about the progress of work, to ask specific questions, or to give specific information. The Research Coordinator was responsible for keeping the classes supplied with materials as they needed them, for collecting the feedback information from the projects, and for supervising the testing program.

Methods and Instruments of Evaluation

Questionnaires were mailed to the teachers periodically to obtain feedback, accompanied in all cases with prepaid return envelopes. The questionnaires provided both open-ended and forced-choice responses. During the first year, four questionnaires reported on the readiness program, the use of the Aud-X, the technological aspects, and various general aspects including provisions for individual record keeping. During the second year, teachers completed questionnaires relating to the use of *Look and Write*, organization of the class, socio-economic status, and the Carousel Library. In order to ascertain the change in the use of instruments throughout the year, questionnaires for each instructional group in the class were sent for Cycles 1, 10, 20, and 30. The total number of cycles completed by each pupil and information regarding the experience and training of the LLL teachers was also collected.

During both years teachers were supplied with Continuous Feedback Cards on which they could immediately report difficulties, make suggestions, or comment on any segment of any component in the system. They mailed separate cards for each item as the occasion arose. Teachers also kept Notational Records reporting anecdotes of the reactions of their classes to the materials in each cycle or readiness stage. Completed pupil workbooks were returned to EDL for analysis.

During the first year of the research program, 1965-66, all projects were requested to administer the same standardized tests. This, however, proved to be impossible to carry out. Local school systems had existing requirements for testing programs, regulations for purchasing tests, and similar tests in stock. The resultant use of a variety of standardized tests made comparison of combined projects mean-

ingless. This factor, coupled with that of the considerable change in the components of the LLL system from the first year to the second year of usage, prompted a decision to report only non-test information from the first year of usage of the LLL system.

During the second year of the research program, 1966-67, tests were supplied by EDL to all experimental and control classes in order that a comparative analysis might be made. The three tests used for objective evaluation were:

1. The *Metropolitan Readiness Tests*, Form A, 1964, 1965 edition, was administered in September 1966 to thirty-nine of the forty-six classes. Three LLL experimental classes were administered the *Murphy-Durrell Reading Readiness Analysis*. One control class was administered the *Lee-Clark Reading Readiness Test*, and three control classes were not administered any readiness tests.
2. The *Pintner-Cunningham Primary Test*, Form A, 1964, 1966 edition, was administered to all of the classes in December 1966.
3. The *Metropolitan Achievement Tests: Primary 1 Battery*, Form B, 1959 edition, was administered to all classes during May.

Methods of Analyzing Data

Subjective data collected by questionnaires and verbal reports, both oral and written, were classified and summarized by the research staff at EDL. Error analysis of pupil responses in workbooks was also conducted by the EDL research staff. As information from these sources became available, reports were distributed to the LLL editorial staff and to other interested company personnel for use in improving the materials or equipment. The questionnaire responses were tabulated by item, and summary statements were drawn.

The standardized test scores were transmitted to the Computer Center of Teachers College, Columbia University, where statistical analysis was made. Raw scores of the readiness and achievement tests and deviation IQ scores of the intelligence test were used in the computations. Two general types of analyses were conducted; one to give distribution information and the other to give comparative data. The distribution information included the regular measures of central tendency and dispersion. Comparisons were made through the application of the t-test, using the two-tailed test, to determine whether the differences between the means were statistically significant.

The statistical analyses were applied to all classes of all projects, combined into LLL or control groups, for an overall comparison. The total groups were further analyzed according to sex and according to the lower or upper three deciles in readiness and/or IQ scores. An additional comparison was made between boys and girls within the LLL group and between those within the control group.

Methods of Reporting Data

The results of the two-year research program are reported in two major sections, Subjective Evaluation and Objective Evaluation. The Subjective Evaluation reports on the appropriateness of the materials and instructional approaches as reported by teachers and other observers. Questionnaires, interviews and classroom observations were used to gather this data. The Objective Evaluation reports on the comparative effectiveness of the *Listen Look Learn* system to the basal textbook approach to teaching beginning reading. Standardized achievement, aptitude, and readiness tests were used to collect this data.

III

RESULTS OF SUBJECTIVE EVALUATION

The Subjective Evaluation reports the findings related to the evaluation of the appropriateness of the materials and instructional approaches of the LLL system during the first year of development and the appropriateness and effectiveness of the revised materials and instructional approaches of the LLL system during the second year of development. This section also describes the changes in the program as a result of these findings.

LLL Teacher's Guide

The first version of the *Teacher's Guide* was a one-volume, standard size three-ring loose-leaf binder which contained eight sections including an introductory Overview section, detailed Pre-Reading (readiness) and Cycle Lesson Plans, and a Resource Materials section. Teachers commented very favorably on the wealth of suggestions included in the *Teacher's Guide* but asked that it be reorganized to eliminate the necessity of turning from section to section during each day's lesson.

Reactions of the teachers to the LLL *Teacher's Guide* are reflected in their comments:

Resource Material is excellent. I am taking advantage of as much of it as I possibly can in each day's schedule. We find it very exciting.

We are enthusiastic about the LLL materials and Teacher Manual suggestions.

Teacher's Guide is well written—it is quite a lot to read, organize and execute, but well worthwhile.

Having some difficulty in finding what I want in Teacher's Guide quickly enough, even though I've spent plenty of time in preparation the evening before.

With my "slow starters," I have had to give much more supervision to get the activities going than described in the Guide. I have had the accelerated group and slow starters in previous years but I have never had a more enthusiastic group. I attribute this to the materials and suggestions in the Teacher's Guide (Excellent).

Need more suggestions in providing work for the children to do while I work with one group.

The class is now moving away from the daily agenda. Very often, the more able students decide what they want to learn that day, plan it themselves or with a friend, and proceed. It is the most efficient teaching situation I've ever witnessed.

The revised *Teacher's Guide* was expanded to three volumes: Overview, Volume I; Cycle Lesson Plans, Volume II; and Resource Materials, Volume III. In the revision, specific parts of the Resource Materials section were relocated within the particular day's plans to which they pertained. The Readiness Days were renamed Readiness Stages in order to convey more strongly the idea that the teacher should pace the activities for her class according to their ability rather than try to accomplish everything listed in the daily plan. Part IV of each cycle, Individualized Reading and Related Language Arts, was greatly enlarged with the addition of many more suggestions for activities. A master list of words introduced in the LLL system was included in Resource Materials, Volume III.

During the second year of usage teachers were supplied with transitional Lesson Plans giving specific suggestions in line with revisions underway. The content provided for the reorganization of structure in the early cycles of the LLL system and gave specific suggestions for supplementing the original lessons used with the Aud-X (EDL instrument for synchronizing audio and visual presentations). Suggestions for activities were particularly elaborated in Part IV, Individualized Reading and Related Language Arts. Specified procedures for the word recognition lessons used with the Tach-X (EDL tachistoscope) were altered. The transitional Lesson Plans were prepared as xeroxed copies of mechanical plates, and eventually bound with plastic rings; this proved to be a very satisfactory temporary arrangement.

Readiness Materials

The first trial materials of the *Listen Look Learn* Multi-Media Communication Skills System sent to the schools in the fall of 1965 were for the readiness and beginning reading periods of the school year. It was this group of materials which later received the greatest revision.

At the end of the pre-reading program, during 1965-66, teachers were asked to evaluate, on a questionnaire, the various components for the readiness portion of the LLL system. Table 6 indicates the degree of success reported by the teachers and their overall evaluation of the various components. Actions taken relating to the various elements of the system are summarized.

TABLE 6
DEGREE OF SUCCESS AND EVALUATION OF COMPONENTS OF THE PRE-READING
PROGRAM REPORTED BY TEACHERS
BASED UPON USE WITH THEIR CLASSES, 1965-1966

LLL Components	Degree of Success				Evaluation		
	High	Moderate	Poor	Not Used	Best	Most Unique	Needs Revision
Weston Woods Library	9	4	1		4	3	3
Look and Write	6	9	1		3	4	5
Tach-X ABC Filmstrips	3	7	2	1	4	6	1
Kinesthetic Activities	7	3	3	1		1	
Pre-Reading Worksheets	5	6	2				
Picture Story Cards	6	3	2	2			1
Hear Games	5	4	5	1		1	
Aud-X Readiness Lessons							3
Stories Composed by Children	3	6	1	2	1		

Weston Woods Sound Filmstrip Library

Weston Woods filmstrips and records are used in the LLL system to develop listening comprehension, oral recounting, and discussion. The filmstrip projected in this case by the Tach-X, (which may be used as a standard filmstrip projector), displays the original illustrations from the book while the record, used on any record player, gives the original text of the book. Referring to the questions provided in the *Teacher's Guide*, the teacher directs the children to listen for specific purposes, recall sequences of ideas and significant details, interpret the story, and make comparisons and inferences. In addition to the primary use of the Weston Woods Sound Filmstrips to teach listening comprehension, they are used to assure a background of common experiences among the children in the class and to introduce them to worthwhile literature.

One album of ten stories was sent for use during the first year. Response to these was extremely favorable; the color in the filmstrips was particularly liked. However, this feature gave some difficulty, causing the filmstrips to stick in the Tach-X. Anti-adhesive aperture plates were sent and alleviated this problem.

Other reactions of the teachers during 1965-66 follow:

I hope that more Weston Woods Sound Filmstrips will be available.

Have shared the Weston Woods records and filmstrips with other first grade teachers. All share my enthusiasm for them and hope others will be made available. Aside from their evident value to our enjoyment of literature, their value for readiness skills and their development produced a new and fresh reaction from teachers and students.

In most cases I had to simplify questions for stories.

I'm sure that every teacher has to revise questions for her class in her own vocabulary, using words which they hear and understand when she speaks to them.

We recapped the Weston Woods stories on charts, pupils illustrated and read the charts in groups during free periods.

A vote of confidence for the Weston Woods stories. My children are still enjoying and learning from them. These stories are most often chosen at book telling time, and are told more completely and meaningfully than any others. The children will often vote for a second showing in place of free activity on Friday.

Some comprehension questions listed in the *Teacher's Guide* for the teachers to ask regarding each of the Weston Woods stories were inappropriate for some classes. These questions were subsequently revised for the new *Teacher's Guide*.

The sequence of the stories was reorganized in order to move some of the more complex stories from earlier stages to later ones.

More stories were requested and, accordingly, another album of ten stories was added to the Weston Woods Library for the second year of usage of the LLL system.

Look and Write

The eye-hand coordination workbook is designed to help develop the visual-motor abilities that relate to identification and formation of letters and numerals. The first version containing 107 pages, was sent to the schools in September 1965. The response was good. Teachers said that the children liked it, seemed to understand the book, were able to follow the directions, and were eager to finish the work in it. However, the need for additional practice was reported and several teachers constructed practice sheets for their classes.

The entire book was reorganized into eight parts in time for the second year of usage, expanding it to 116 pages. Color was added, additional practice space was provided for each exercise, directions were made more detailed, and directional arrows were used to indicate the movement the child should follow in reproducing the lines, curves, and letters.

At the end of each part of the book an exercise was provided to be used with Tach-X ABC Accuracy Filmstrips. Some teachers reported that these sections were done more accurately than the workbook pages done without the Tach-X. Also, some teachers reported that the children had more difficulty in forming abstract curves, than in forming the actual letters.

Look and Write was designed to be used largely auto-instructionally. On a questionnaire, eighteen teachers reported the success of their classes in using the revised book independently, as follows:

In seven classes most children were successful in doing the work by themselves throughout the book.

In six classes more than one-half of the children could work independently, either from the beginning of the book or after using one-third of it.

In four classes approximately one-half of the class was successful throughout the book.

In one class none of the children could work parts 4 or 5 of the book independently, about one-half were successful with parts 3 and 7, and most children in the class were successful with parts 2 and 6.

Inquiry was made regarding the number of pages completed by the children in each working session. The fastest pupils worked four or five pages in ten to fifteen minute sessions, while the slowest children worked two to four pages in fifteen to twenty minutes. Most of the teachers assigned a specific number of pages per session, but some made no specific assignments, and one made only occasional assignments.

Tach-X ABC Accuracy Filmstrip Set

Eleven filmstrips of this set of twenty-five are designed to be used with *Look and Write*. These contain symbol elements placed on windows similar to those appearing in *Look and Write*. The remaining fourteen of the filmstrips are to be used for perceptual accuracy training as instructed in Part I of the Cycle Lesson Plans.

The general reactions to the eye-hand coordination instruction using the first versions of *Look and Write* with the Tach-X ABC Accuracy Filmstrips are given in Table 7.

TABLE 7
EVALUATION OF EYE-HAND COORDINATION INSTRUCTION
1965-1966

Skill Taught	Number of Classes		
	Helped	No Help	Uncertain
Children more accurately and quickly found their place on writing paper.	12	1	2
Children formed letters and numerals more correctly.	8	4	3
Children made strokes in proper direction and sequence when forming letters and numerals.	9	4	2

Some comments from the teacher's Notational Records regarding the use of the Tach-X ABC Accuracy Filmstrips are interesting:

Tach-X SE1(Dots)1. The pupils enjoyed the "game."

SE2(Dots)2. Fifteen perfect scores out of twenty-seven.

Children handled SE1(Dot)1 easily. By the end of the session they were all able to handle speed A most of the time.

SE1(Dot)1, SE1(Dot)2 relatively to quite easy for all; especially boys.

Tach-X was fun but confusing to the children, at first. Need more drill on

placing dots in windows.

They enjoy the Tach-X exercises.

Tach-X seems to be an excellent way to have them practice writing.

Attention unbelievable—children and teacher like it!

I feel the children have become much more observant in the way in which they are to make their letters.

Kinesthetic Activities

The *Teacher's Guide* contains specific instructions for constructing kinesthetic letter charts and scripts using tagboard. These charts are to be used by the children singing little rhymes from songs or chants describing the formation of the letters. In addition, some of the Readiness Worksheets have letters containing broken lines to give an illusion of texture, for the children to use at their desks in forming the letters. Most teachers reported that they did construct the kinesthetic letter charts and strips as directed. One teacher reported using Elmer's Glue and Parakeet Gravel. Some teachers used a felt marking pen to form the broken lines of the letters and then applied a ridge of Elmer's Glue over the line giving a smooth raised surface. Some of the reactions to this part of the instruction follow:

Pupils do learn letters faster by use of kinesthetic letter strips.

Continued letter practice with aid of much-used kinesthetic chart.

Children are too far advanced for kinesthetic charts.

They are using kinesthetic charts and calling letters to each other in free time.

I believe this kinesthetic approach to our writing should be helpful, although with a large class it is hard to check to see that each child is doing his letters in the proper direction.

So simple and such satisfactory results.

In the Resource Materials volume of the revised *Teacher's Guide*, the instructions to the teacher were clarified. The directions for the construction of kinesthetic letter charts were rewritten, regrouping the letters to introduce first those formed most simply.

Readiness Worksheets

The first version of these was entitled Pre-Reading Worksheets. The set contained sixteen different sheets in quantities sufficient for each child in the class. Six sheets were devoted to the kinesthetic letters. Six other pages contained puzzles and other exercises in which the children cut the pages apart and arranged the pictures in some order; these were most popular.

The Pre-Reading Worksheets used during the first year were well received, but did need some revision.

Some comments from the teachers were:

Worksheet No. 1 has uneven outside edges when assembled.

Worksheet No. 2 was extremely difficult for the children.

There seems to be an error on Worksheet No. 4. It isn't possible to set these pictures into proper sequence.

In the revised Readiness Worksheets, Worksheet No. 1, a puzzle, was redone to make the edges even when assembled. Worksheet No. 2 which contained nine pictures relating to three sensory functions, seeing, hearing, and speaking, was revised, changing the illustrations to make the relationships more obvious. Worksheet No. 4 was to accompany a little song given in the *Teacher's Guide*. However, since it was scheduled on the same day as the Weston Woods story, *Make Way for Ducklings*, and because the song was placed in the Resource Materials section of the *Teacher's Guide*, many of the teachers thought it was intended to relate to the story. In addition, one of the ducks was omitted from one of the pictures in the sequence. Corrections were made by drawing the needed duck in the picture and by moving the song in the *Teacher's Guide* to the section calling for its use in the Cycle Lesson Plans, Volume II. The Worksheets No. 5, 6, 7, 8, 9, and 10 all contained kinesthetic letters. These were reorganized on the basis of strokes used in the formation of letters to correspond with the groupings used in the construction of the kinesthetic letter charts.

Controlled Reader Readiness Pictures

During the first year of the LLL Research Program, one school in a deprived area used the Controlled Reader Readiness Pictures. These children particularly needed more work in identification of objects and in auditory discrimination, and these materials proved effective. During the second year of usage this set of twenty-five filmstrips was added as a regular component of the LLL system. Specific responses from the teachers relating to the Readiness Pictures were:

More work needed on classification of words for people, things, what we do, and on word meaning as related to families and words formed from other words as for example, light, headlight, firelight, lighthouse, lightweight.

I like the content of the Readiness filmstrips very much. They seem to be very helpful in teaching beginning consonant sounds.

Stories and Experience Charts Composed by Children

All teachers seemed to agree that recording the stories composed by children and using the stories for reading and for matching sentences and words were very beneficial activities. However, they commented about the great amount of time re-

quired to carry out the activity and reported that they were unable to do as much of this as they would have liked. Some reactions were:

Children's vocabulary very enriched through use of Pre-Reading materials and suggestions.

Our experience chart with the school personnel developed into an excellent discussion and should have an effect in helping the children feel an important part of the school.

Art Activities

The *Teacher's Guide* suggested several art activities particularly during the readiness period. The teachers commented favorably on these.

Color work successful. We made a mural of *The House That Jack Built*.

They can draw good pictures of words beginning with same sound.

Inspiration for an attractive bulletin board of the five senses.

Several children drew lion pictures in their free time as a result of the interest and stimulation.

Georgie stimulated an especially good follow-up painting activity due to simplicity of lines in illustrations. *Five Chinese Brothers* had a similar effect, together with the fact that all first grade children feel very much at home drawing houses.

Left filmstrip of *The Little Red Lighthouse* showing, to draw from, after replaying it. Children's illustrations were varied and good.

Children enjoyed making large pictures of themselves and results were satisfactory. Many are still in the symbol stage.

Made pictures of our day and put them in sequence.

Children very creative with collage. Felt full freedom to explore with materials. Children need more work with finger-paint.

Picture Sequence Cards

The first version was called Picture Story Cards and consisted of five sets of four cards which were to be arranged into a logical sequence by the child who then was to tell an explanatory story supporting his sequential arrangement. Teachers felt that the activity was a useful one because the idea of sequence is one which does not develop easily without instruction at this early age. The cards also furnished a vehicle for the development of speaking ability. However, the teachers all reported difficulty with the set dealing with the historical development of cars. They also said that the pictures were too small and that they would like them in color. The original size of 4" x 5-1/2" was appropriate for individual work but too small for use by a group of children.

The new set of Picture Sequence Cards was available for the second year of usage. It was expanded to ten sets of four pictures and the size was increased to

6" x 8", a size large enough for small groups and yet small enough for an arrangement of four cards on a child's desk. Only two sequences of the original five were retained and the pictures in these were redrawn. Several of the sets of cards could be put together in various appropriate sequences, which the children were encouraged to do as long as they could defend their arrangement with a logical oral discourse.

Summarized comments from the teachers during 1966-67 regarding the Picture Sequence Cards were:

Excellent for entire group; used to the fullest.

Very good during Readiness for teaching sequence and inference; good for slow learners.

Sequence one of the hardest concepts to teach; cards are very helpful; don't feel we have enough of this type of teacher aid.

Have not found that the expected ordering skills have carried over with my present class.

Good subject matter; clear and easily understood; but more interesting if in color.

Interracial characters good; would have liked more nationalities.

Liked the new ones I received this year much better than those for last year; liked the larger size.

Immensely valuable for provoking discussion and encouraging growth of oral language.

Much could be done with these in Kindergarten.

Used individually by the children to make up their own stories; they loved them.

Used them in creative writing; children enjoyed them and looked forward to their use.

Hear and Hear & Read Games

During the first year of usage there was one box of cards, all of which related to initial consonant sounds. The revised Hear and Hear & Read Games supplied for the second year of usage related to both initial and final consonants, and consisted of two boxes of cards. In each box was a group of cards containing only pictures and another group of cards half of which were pictures and half of which were words which matched the initial or final consonants of the picture names. Teachers found the auditory discrimination required in playing the game to be a difficult skill for many children and found that they had to work with the children extensively in the early part of the year, but that when this was done, the

games were popular as independent small group activities.

Some comments from the teachers regarding the use of the Hear and Hear & Read Games were:

Excellent for the more mature, average, and better than average pupils; they made much use of the games independently.

Excellent way to learn beginning sounds.

Very useful especially for beginning sound recognition.

I used the pictures for beginning sound exercises.

I like the large clear type words and the simplified drawings; a little larger size might be better.

Many of the pictures in the Hear Game have helped increase the children's vocabulary as well as phonics.

The idea is meritorious.

Color would make the game more attractive.

The children enjoy them and become quite stimulated when using them.

Much help in teaching the beginning and ending sounds.

Aud-X Readiness Lessons

For the first year of usage, five Aud-X Readiness Lessons were provided, the fifth of which presented the entire alphabet. The teachers asked for more readiness lessons on the Aud-X so that all children would get an opportunity to use the instrument at the beginning of the year when interest in it was high; accordingly, they were expanded to ten lessons. The completely rewritten Aud-X Readiness Lessons emphasized initial consonant sounds through the use of pictures, letters, and words, to illustrate the fact that words having the same beginning sounds also have the same beginning letters.

During the second year of usage, the ten revised Aud-X lessons were supplied to the teachers in the form of colored filmstrips which they projected in the Tach-X while they read the text from editorial scripts. The accompanying workbook pages were supplied for the children. Reactions to these improvised Aud-X lessons were mixed. Some classes had difficulty and others succeeded very well. Some classes needed considerable additional help on auditory discrimination in addition to that given in the Aud-X lesson. Some children of limited experience had some difficulty in recognizing the fanciful drawings. Other children were very successful with the lessons and learned their alphabet by the end of the readiness period.

During the first year the teachers reported that some children did not look back at the Aud-X screen after looking at their workbook page. In the revised lessons children were directed back to the screen for each correction frame. This pattern of specific redirection to the screen was continued in the revised Aud-X lessons to

Cycle 7, when the direct cue was discontinued and the narrated explanation was used to bring the children's attention to the screen.

Materials for Cycle Lessons

The part of the year devoted to formal reading instruction is organized into cycles of lessons. Cycles 1-3 is called the Pre-Reading period, during which twenty-four words are taught and at the end of which the first Sampler, a story booklet, is read. During both the Pre-Reading period and Cycles 4 through 11, practice reading material is provided following each Aud-X lesson. The Samplers provide stories for guided reading for each of the cycles through Cycle 20. For Cycles 21-40 guided reading is provided in hard-bound Anthologies.

Each cycle consists of four parts:

- I Perceptual Accuracy and Visual Efficiency
- II Building Experiences
- III Skill Building
- IV Individualized Reading and Related Language Arts

Daily schedules include some activities from each part of the cycle. Part III, Skill Building, has a pre-planned sequence of lessons through which the child works. The lessons in the other three parts are planned in a more general fashion with more flexibility left in the hands of the teacher. The Skill Building part of the cycle consists of Aud-X lessons, Tach-X Word Recognition, Controlled Reader Processing Training, and Controlled Reader Fluency Training. Part IV of the cycle consists of activities reported upon in Guided Reading, Independent Reading and Related Language Arts.

Perceptual Accuracy and Visual Efficiency

Tach-X ABC Accuracy filmstrips are used in developing perceptual accuracy with tachistoscopic training started early in the Readiness Stages as a part of the eye-hand coordination work. Accuracy training, using the balance of this set of filmstrips, is scheduled daily for five or ten minutes during which children try to reproduce on their paper the numerals, letters, or symbol elements seen in the flashed exposure, always starting from the left of the group shown. Brisk rhythmic pacing of the exposures encourages the child to employ alert attention in an effort to increase the number of symbols which he can record accurately. The tachistoscopic work is continued with the class until nearly all of the students are able to record at least three symbols per exposure of 1/100th of a second, following which tachistoscopic accuracy training is used intermittently throughout the remainder of the year.

At this point Motility Training, using the Controlled Reader, is introduced and continued throughout the year. Each line of material contains three numerals, letters, or symbol elements placed at the extreme left, middle, and extreme right of each line. The guiding slot is used to encourage the movement of the eyes along the line of print in a fashion similar to that employed in reading. During the training the child counts the quantity of a specified symbol appearing in each part of the filmstrip. The speed of the Controlled Reader is adjusted upward as indicated by the accuracy of the children in reporting the number of specified symbols seen. The goal of Motility Training is to have the class able to respond with

seventy-five per cent accuracy at approximately ninety lines per minute.

Questionnaires asked the teachers to report on these aspects of training in 1965-66. Training was conducted an average of ten minutes per session with daily sessions extending over periods of six weeks to twenty-six weeks. Most LLL pupils achieved sufficient perceptual accuracy to distinguish groups of unrelated letters, numerals or symbol elements in tachistoscopic exposures of 1/100th of a second.

Teachers reported that they gave Motility Training four or five times a week in ten-minute sessions. Motility Training extended over periods of time varying from four weeks to thirty weeks. All teachers started the presentations at fifteen or twenty lines per minute. Most progressed to eighty or ninety lines per minute with two classes achieving one hundred twenty lines per minute.

The response to these materials was positive; they were easily handled by the pupils. They provided a way of giving training in accurate seeing and oculo-motor facility without burdening the child with the necessity to recognize words; thus laying the foundation of an efficient visual activity early in beginning reading.

The following comments were received from teachers:

The instruction in the Guide was adequate. The procedures were followed as given. The children really enjoyed this training. They thought it was fun, and they were challenged to count correctly.

The strengths of the training were that the children were trained to perceive visually at fast rates and to move from left to right. One weakness mentioned was that there were so many zero responses, although it was agreed that the numbers should be low, possibly below 10.

When this was reached all enjoyed it. It was refreshing, stimulating, rewarding and "ego-building" for those who had worked hard on Accelerated Discrimination.

Explanation clear. No modifications needed. Excellent for strengthening habits of good directional attack and preparing for fluency in silent reading. Did not have time for daily training as suggested in Guide.

Building Experiences

Suggestions for making sure that the children would have the necessary information and understandings to easily comprehend the concepts used in the Aud-X Story lessons are given in the Cycle Lesson Plans of the *Teacher's Guide*. Elsewhere, suggestions are made for teaching children to formulate their personal agendas for daily work, for reporting news, and for stimulating group discussions. Out of these activities arise subjects which are specifically related to some of the Aud-X stories.

Some teachers listed the titles of Aud-X stories, and kept a record of the experiences occurring with the class which would build understandings for the stories. Subsequently, instructions to the teacher for constructing a chart and making notations were included in the Classroom Organization section of the *Teacher's Guide*.

Aud-X Lessons

Three types of Aud-X lessons are provided in the LLL system. The Words lessons focus on the graphic quality of the words introduced. The Story lessons present the words in the context of a story narrated orally and Word Study lessons em-

phasize phonetic and structural analysis of the vocabulary. In all cases the purpose of the Aud-X lesson is to introduce new vocabulary.

During the formative period there were available only two types of Aud-X lessons: Story and Word Study. When the need for additional lessons became evident during the first year of usage, Words lessons were planned as an additional lesson in the sequence through each of the first twenty cycles. Cycles 1 and 2 were expanded even more. Cycle 1 includes seven Aud-X lessons; four of which are Words lessons, one which is a Story lesson, and two which are Word Study lessons. Cycle 2 contains two Words lessons, one Story lesson, and one Word Study lesson.

The structure of organization of Aud-X lessons within the cycles was changed in February of the first year of usage, after most teachers had reported that the vocabulary load of words presented in the two Aud-X lessons was too heavy for the children to assimilate during the early cycles. Specific words were selected from the existing Aud-X lessons to be dealt with in the additional Words lessons.

The new plan of organization listing the words for each Aud-X lesson was sent to all teachers immediately. During the second year of usage, the transitional lesson plans gave specific instructions for the teaching of the vocabulary in the new Words lessons. This procedure served to give greater emphasis to the particular vocabulary involved because it was then presented by the teacher and continued in the presentation of the original Aud-X lessons which were used throughout the two years of the formative period.

A questionnaire regarding the availability and the functioning of the Aud-Xes in the classrooms was sent to the teachers in March 1966 and was returned on or about the first of April. The specification for a complete LLL installation calls for two Aud-Xes in each classroom. Of the seventeen locations, two projects had had two operating Aud-Xes most of the time, four had had two operating Aud-Xes about half of the time, one considerably less than half of the time, eight projects had had two operating Aud-Xes none or almost none of the time, and two did not respond. As to the dependability of the Aud-Xes, half of the twenty-eight Aud-Xes in the classrooms were reported to have been erratic from the start, and nine of them were reported as being mostly dependable.

During the formative period the Aud-X instrument was completely redesigned. The first production models of this new design, Mark 2, did not become available until the later part of September 1967 when replacements were sent to the installations one at a time throughout the fall, until all regular installations had two Mark 2 Aud-Xes each.

However, during the second year of usage the classes had available only the original Aud-X in numbers similar to those of the first year. Because the original Aud-Xes were at times undependable, editorial scripts of all Aud-X lessons were supplied to the teachers. By this means the teachers could read the oral part of the lesson while they manually advanced the visual display on the Aud-X.

The use of the Aud-X in presenting vocabulary was evaluated by the teachers in answer to an open-ended question, the answers to which are reported in Table 8. The question was:

Exclusive of the mechanical malfunctioning of the Aud-X, tell us as much as you can about the effect of its use by your children. What would you say are its strengths and weaknesses? What suggestions can you make to us in order to help us gain the full potential from the Aud-X? What advantages have you found in using it?

TABLE 8
STRENGTHS AND WEAKNESSES OF AUD-X USAGE
AS REPORTED BY TEACHERS, 1965-1966

Comments	Number of Times Mentioned
<u>Strengths and Advantages</u>	
High interest level and enjoyment, much enthusiasm.	8
Minimal supervision leaves teacher free to work with other children.	6
Stories interesting, exciting.	5
Words presented in meaningful way, highly varied approaches.	5
Reinforcement by sight, sound, and repetition.	4
Efficient visual aid.	3
Immediate check on responses leaves little chance of mislearning.	3
Children learn to listen.	3
Provides easy means of teaching after absence.	3
Individualized instruction.	2
Male voice on records very clear, pleasant, and lends variety.	2
Wide range of vocabulary allows earlier reading of library books.	2
Child is unaware of classroom distractions.	1
Children learn to follow directions.	1
Sequential development of directions, well planned.	1
Student supervision and cooperation evident.	1
<u>Weaknesses and Suggestions</u>	
Lesson too mechanical, format too consistent.	3
Phonetics introduced too late.	2
Words of similar graphic forms introduced in same lesson.	2
Difficult to reinstate pupil in cycle sequence after absence.	2
Reinforcement insufficient for middle and slower child.	2
Too many words in earlier lessons.	2
Some pupils delay work in book until answer appears on screen.	1
Aud-X feedback does not always help child understand answer.	1
Children look at workbook when they should be looking at Aud-X.	1
Noise when frame changes sometimes obscures sound of voice.	1
Earphones hurt (when not properly adjusted).	1
Wires cumbersome.	1
Screen not large enough.	1

One of the principal strengths noted for the Aud-X was that the instrument has great utility in clearly communicating to the child the specific word(s) or letter(s) to which his attention is directed. Another highly beneficial feature of the Aud-X is its facility in supplying feedback to the student regarding the responses he makes in his workbook. The suggestions made by the teachers related largely to the lessons and workbooks prepared for use with the Aud-X. These suggestions together with specific evaluations of the individual lessons were incorporated in the revision of the Aud-X filmstrips, records, and workbooks.

During the first year of usage the teachers evaluated the appropriateness of each of the first twenty Aud-X Story and Word Study lessons for their fast, middle, and slow instructional groups of pupils. Five categories describing various degrees of appropriateness were used in the evaluation, defined as follows:

Highly Appropriate: Strongly appealed to practically all the children and they were able to respond correctly with enjoyment and understanding.

Moderately Appropriate: Appealed to most of the children and they were able to respond correctly in most instances, but did not evidence so much enjoyment.

Fairly Appropriate: Only about half of the children liked this lesson and were able to respond well.

Limited Appropriateness: Only a fourth to a third of the children liked this lesson and were able to respond well.

Not Appropriate: This lesson missed most of these children.

Tables 9 and 10 report the responses given by the teachers for their various fast, middle, and slow groups of children. The total number of groups reported upon for both types of Aud-X lessons decreases as the cycles advance, reflecting the progress of the children through the cycles, that is, more groups of children had completed Cycle 1 than Cycle 2, and so on. The three stories selected most often by the teachers as highly or moderately appropriate were "Daniel's Party," "Bimbo the Baby Lion," and "Bobby Little." The last five Aud-X Story lessons were also evaluated as both highly and moderately appropriate for the various groups within each class. Since only half or one-third as many groups had progressed to these cycles, the indication is that these lessons were rated according to the reactions of the faster children in the classes.

TABLE 9
APPROPRIATENESS OF AUD-X STORY LESSONS FOR FAST, MIDDLE, AND SLOW GROUPS
AS REPORTED BY LLL TEACHERS, 1965-1966

Aud-X Stories	Total Groups Reported Upon	Number of Groups												Not At All Appropriate	
		Highly Appropriate			Moderately Appropriate			Fairly Appropriate			Limited Appropriateness				
		Fast	Mid	Slow	Fast	Mid	Slow	Fast	Mid	Slow	Fast	Mid	Slow		
A-1 Story, "Blacky and Her Kittens"	43	6	6	6	7	6	3	1			2	2	4		
A-2 Story, "The New Teacher"	39	4	3	2	7	8	6	2	2	2			1	1	1
A-3 Story, "Daniel's Party"	39	10	9	9	3	4	2	1	1						
A-4 Story, "Bimbo the Baby Lion"	39	11	9	8	3	5	2			1					
A-5 Story, "The Policeman"	33	7	6	5	5	4	4	1					1		
A-6 Story, "Bobby Little"	38	10	10	8	3	2	3				1	1			
A-7 Story, "The Biggest Thrill"	34	8	8	7	4	3	2	1					1		
A-8 Story, "The Man Who Never Laughed"	34	8	7	7	4	4	3	1							
A-9 Story, "The Lonely Only Elephant"	31	8	7	5	3	3	4	1							
A-10 Story, "Vincent Visits the Zoo"	32	9	9	7	2	2	3								
A-11 Story, "Andy's Ride"	28	7	7	5	3	3	3								
A-12 Story, "My Name Is Don"	27	6	6	6	2	2	2	1	1	1					
A-13 Story, "The Sky Boat"	25	5	5	5	1	1	1	3	3	1					
A-14 Story, "Billy Zookeeper"	22	5	5	3	3	3	3								
A-15 Story, "About Colors"	13	3	3	2	1	1	1	1		1					
A-16 Story, "The Frog That Flew"	19	5	5	3	2	2	2								
A-17 Story, "The Secret Weapon"	14	4	4	3	1	1	1								
A-18 Story, "The Kitten Who Was Taught By A Mouse"	17	4	4	3	2	2	2								
A-19 Story, "Maria and the Ice Cream Man"	14	3	3	2	2	2	2								
A-20 Story, "A Night at the Circus"	14	3	3	2	2	2	2								
Total Evaluations		126	119	98	60	60	51	8	12	6	2	3	8	1	1

TABLE 10
APPROPRIATENESS OF AUD-X WORD STUDY LESSONS FOR FAST, MIDDLE, AND SLOW GROUPS
AS REPORTED BY LLL TEACHERS, 1965-1966

Aud-X Word Study	Total Groups Reported Upon	Number of Groups												Not At All Appropriate		
		Highly Appropriate			Moderately Appropriate			Fairly Appropriate			Limited Appropriateness					
		Fast	Mid	Slow	Fast	Mid	Slow	Fast	Mid	Slow	Fast	Mid	Slow			
A-1 Word Study	43	4	4	3	7	5	3	1	3	1	3	3	6			
A-2 Word Study	39	4	4	3	5	4	3	4	5	3	1	1	2			
A-3 Word Study	39	4	5	4	8	6	4	1	1	1	1	2	2			
A-4 Word Study	37	5	6	4	5	4	4	2	2	1	1	1	1		1	
A-5 Word Study, Init. Cons. <u>s</u> , -s end.	38	5	6	5	5	4	4	2	2	1	1	1	2			
A-6 Word Study, Init. Cons. <u>t</u>	38	8	8	5	4	4	5				1	1	2			
A-7 Word Study, Init. Cons. <u>b</u>	37	7	7	4	5	5	5				1	1	2			
A-8 Word Study, Vowel Short <u>i</u> , -ed end.	34	6	6	6	5	4	3				1	2	1			
A-9 Word Study, Init. Cons. <u>f</u>	31	6	5	4	4	5	4	1	1	1						
A-10 Word Study, Vowel Short <u>u</u>	30	4	4	3	5	6	5	1	1	1						
A-11 Word Study, Init. Cons. <u>w</u> , -ing end.	26	3	3	3	4	5	4	2	1	1						
A-12 Word Study, Init. Cons. <u>d</u>	26	5	5	4	3	3	3	1	1	1						
A-13 Word Study, Vowel Short <u>a</u>	25	4	4	3	3	3	3	2	2	1						
A-14 Word Study, Init. Cons. <u>m</u>	22	3	3	2	4	3	3	1	2	1						
A-15 Word Study, Init. Cons. <u>r</u>	18	3	3	2	1	2	1	3	2	1						
A-16 Word Study, Init. Cons. <u>c</u>	19	3	3	1	3	3	3	1	1	1						
A-17 Word Study, Vowel Short <u>e</u> , Init. Cons. <u>g</u>	12				3	3	3	1	1	1						
A-18 Word Study, Init. Cons. <u>l</u>	16	1	1		4	4	4	1		1						
A-19 Word Study, Init. Cons. <u>h</u> , 's end.	13				4	4	3	1		1						
A-20 Word Study, Init. Cons. <u>n</u>	14	1	1		4	4	4									
Total Evaluations		76	78	56	86	81	71	25	25	18	10	12	18			1

Table 11 indicates a somewhat larger number of evaluations rated the Aud-X Word Study lessons as moderately appropriate than rated them as being highly appropriate, with several instances in which they were rated as fairly appropriate. Even for the faster children working in the later cycles, the Word Study lessons were rated as moderately appropriate in most cases.

TABLE 11
APPROPRIATENESS OF AUD-X STORY AND WORD STUDY LESSONS
FOR FAST, MIDDLE, AND SLOW INSTRUCTIONAL GROUPS AS REPORTED
BY LLL TEACHERS, 1965-1966

Degree of Appropriateness	Percentage of Instructional Groups					
	Story Lesson			Word Study Lesson		
	Fast	Middle	Slow	Fast	Middle	Slow
Highly	63	62	61	38	39	35
Moderately	31	30	32	44	43	44
Fairly	4	6	3	13	12	10
Limited	2	2	4	5	6	10
Not at all	0	0	0	0	0	1

Generally, the Aud-X Story lessons were rated as being more appropriate than the Word Study lessons. The main reason for this was that the Word Study lessons attempted to teach both a phonetic principle and a number of unrelated words. The teachers reported that the dual teaching load of the Aud-X Word Study lessons simply proved to be too heavy, particularly in the early cycles. The provision of the additional Words lesson in the revised sequence for each of the first twenty cycles allows more time to be devoted to the teaching of the phonetic principle and the vocabulary introduced.

The Aud-X lessons were intended to be largely auto-instructional. In order to ascertain whether the children were able to work at the Aud-X and complete the exercises in the Aud-X workbook without constant supervision, the teachers were asked to report on the degree of supervision which the children required. Table 12 shows the number of instructional groups requiring varying degrees of supervision. As the children progressed through the cycles, the amount of supervision required to successfully complete the work diminished, and pupils were able to work more independently.

In accordance with the practice of supplying the child with continuous feedback regarding his responses, answer keys have been provided in the backs of the Aud-X workbooks for the portion of each Aud-X lesson which is done independently, following the cessation of the recorded portion. The answer keys have been located in such a way that those for the earlier lessons appear next to the outside edge of each page, an arrangement which allows the child to cut off the strip of paper containing the answers he needs for the present lesson without disturbing the answers for future lessons.

TABLE 12
NUMBER OF INSTRUCTIONAL GROUPS AND TYPES OF SUPERVISION NEEDED
DURING AUD-X LESSONS, 1965-1966

Type of Supervision	Cycles			
	1-5	6-10	11-15	16-20
Direct and constant supervision				
Fast group	6	3	1	1
Middle group	7	4	1	1
Slow group	8	5	2	1
Intermittent supervision which interrupted an average of more than three times				
Fast group	1	3	2	0
Middle group	4	5	3	0
Slow group	4	4	2	0
Intermittent supervision which interrupted an average of three or fewer times				
Fast group	6	5	6	2
Middle group	3	4	5	3
Slow group	3	4	3	3
Minimal supervision with sometimes no interruption				
Fast group	2	3	3	6
Middle group	1	2	1	3
Slow group	1	1	1	2

In 1966-67, the teachers reported on the ability of their children to follow without assistance, the directions of the narration of the Aud-X Story lesson for Cycle 1. Only eight of the fifty-eight instructional groups reported upon could not follow the directions without teacher assistance. The reported answers for the various instructional groups in the classes were:

Able to follow directions	37 groups
Most of the directions could be followed	9 groups
Directions could be followed fairly well	4 groups
Needed teacher assistance	4 groups
Directions could not be followed alone	4 groups

In addition to redesigning the Aud-X and making it a much more reliable instrument, the Aud-X lessons and workbooks were revised in several respects.

1. The format of all lessons provides more frequent pupil involvement. Except during the Story lesson, the children now respond in some way at intervals of sixty to ninety seconds.
2. When the Aud-X gives the child feedback as to the correct answer to an item, it is often accompanied by an explanation as to why the given answer is correct.

3. Specific directions are given to the child for directing his attention to the screen or workbook during the lessons of the first seven cycles. In later cycles the narration supplies cues to the child.
4. The introduction of vowel sounds in Word Study lessons has been moved to the section of cycles beyond Cycle 40 in order that all consonant sounds be dealt with in the first forty cycles.
5. Structural endings and the substitution technique are heavily emphasized in the word attack skills taught.
6. Increased use is made of techniques to focus a child's interest and attention upon the graphic qualities of words and letters.
7. Greater variety is employed in the format of the workbook exercises, requiring greater discrimination and promoting greater learning on the part of the children.

Tach-X Word Recognition

The mastery of rapid recognition of words introduced in the Aud-X lessons is established by the use of tachistoscopic exposures presenting the words on filmstrips projected in the Tach-X. The length of the flashed exposure is gradually shortened from .10 second to .01 second thus qualifying the words presented as instant sight words. The children respond in their Tach-X workbooks. Following the underlining of words presented in flashed exposures, the children identify the same words dictated in a different order. Also, the workbook includes independent activities which are to be completed by the child working alone at his desk, selecting the correct word with the appropriate structural ending to complete the meaning of a sentence.

At the end of the school year, 1965-66, teachers reported on the use of the Tach-X lessons with twenty-seven instructional groups ranging in progress from Cycle 5 to Cycle 30. All except five of these groups were using the fastest exposure, .01 second; four were using .10 second and one was using .25 second. In 1966-67, reports were made on the Tach-X lessons at Cycles 10, 20, and 30. Of thirty-three instructional groups reported upon at Cycle 10, ten groups responded successfully to exposures flashed at .01 second, seventeen groups at .10 second, and six groups used .25 second or longer. At Cycle 20, twenty-five instructional groups were reported upon, five of which used exposures flashed at .01 second, eleven used .10 second, and nine used .25 second or more. At Cycle 30, sixteen groups were reported upon, six of which used .01 second, nine used .10 second, and one used .25 second.

Additional tachistoscopic training for sight recognition of words is provided as needed by the use of discs in the Flash-X, a small hand-operated tachistoscope, which presents the words in an exposure of .25 second. Even though some of the teachers at first reported that they couldn't see the words so quickly, the children evidently did. The teachers reported that:

Flash-Xes being used widely. Children claim they can see the words!

The Flash-X truly motivates the children.

The Flash-Xes are helping some of the children for short periods of time. There is high interest for some children at this point. Some of the children have really made good use of them and have benefited much from practicing.

The revised *Tach-X Word Recognition Book* which was used during the second year of the LLL Research Program contained several revisions from the original version.

1. Throughout the book the words to be copied were printed in a manuscript print, whereas in the original book, regular printed forms were used as models beginning with Cycle 9.
2. Independent exercises in which the child had to choose the correct structural endings were begun at Cycle 5, rather than at Cycle 13 as in the earlier book.
3. Teacher time for conducting the Tach-X lesson was greatly shortened through providing lists of words which the children underlined following tachistoscopic exposures, and circled in response to the teacher's dictation. In the earlier version, beginning with Cycle 13, the children were instructed to write the words flashed or dictated. The amount of time necessary for the children to do the required handwriting tied the teacher to the particular instructional group for an undue length of time.
4. The books were bound with staples instead of plastic spirals because the original bindings had interfered with the movement of the children's hands when they were writing in the books.
5. Beginning at Cycle 21, an independent exercise was added which used the word attack skill taught in the Aud-X Word Study lesson of the cycle.
6. Also beginning at Cycle 21, new words not introduced on the Aud-X were listed at the beginning of each Tach-X lesson to be introduced and taught by the teacher.
7. Answer keys were provided in the back of the book proceeding from the outer edge of the page in the order of the cycles. Each key used one-third of the page which could then be cut from the book and placed alongside the child's work. The key for Cycle 1 could be cut off leaving those for Cycles 2 and 3, the key for Cycle 2 could be cut off leaving the key for Cycle 3, etc.

Some of the comments from the teachers reporting upon the use of the Tach-X lessons were:

Tach-X lesson was enthusiastically received by class.

The Tach-X lesson for each cycle could be lengthened.

They find the lessons long. We find such lessons must be divided to hold their attention.

Generally speaking, there is far too much repetition of format in the Tach-X books.

The uses of known vocabulary to apply initial consonant transfer is excellent. We would like to have had this included much earlier in the program and lots of it.

The Tach-X materials were fine.

Controlled Reader Processing Training

Processing Training presents story paragraphs or riddles on filmstrips containing one word per line, projected in the Controlled Reader (EDL instrument for developing reading fluency), at rates two to four times faster than the usual rate of silent reading. This technique is used in the LLL system to ease the child over the transition from word-by-word reading to fluent reading. The paragraphs are read only silently in order that the emphasis may be upon the fluent intake of words which are mentally processed into ideas. Each word is positioned in the center of the line, where the clearest vision of the eyes is focused. The overlapping of visual images comes only from the movement from line to line and does not include the overlapping peripheral images occurring when the eye moves from left to right across the line of print. This makes possible the projection of reading matter at speeds too high for the children to subvocalize as they read, encouraging them to think the words as they appear rather than to say them.

Processing Training commences in Cycle 9. Following the reading of each paragraph, comprehension questions are asked by the teacher for an oral discussion of the content. This activity becomes a game in which children see if they can understand the main ideas in the paragraph without the necessity for reading every word.

In 1965-66, teachers who started Processing Training with their groups at 120 words per minute ended the year at speeds ranging up to 540 words per minute. During 1966-67, teachers who started their Processing Training at 120 words per minute were using speeds ranging up to 600 words per minute at Cycle 30. When comprehension was insufficient, the paragraph was repeated and the projection rate maintained rather than lowered to the point at which comprehension would be ensured on the first showing. Maintaining the relatively high rate and repeating the projection supplied training in rapid processing of ideas without frustration.

Regarding Processing Training, the teachers reported that:

Processing Training provides a change of pace in the day's activities and the children think it is fun.

By far, the children's favorite type of reading material is riddles, story segments are a low second choice, and unrelated paragraphs are third choice.

They enjoy the Processing Training very much and look forward to it.

Controlled Reader Fluency Training

Fluency in silent reading is taught in the LLL system through the use of stories on filmstrips printed four words per line and projected in the Controlled Reader. The children use a workbook study guide which gives, for each story, a preview page containing a picture, introductory statements or questions, and a list of the words of the cycle which they should know thoroughly; and a second page containing ten comprehension questions to be answered after reading the story.

Using only vocabulary which has been carefully established as sight words, the emphasis in Controlled Reading is upon promoting smoothness and fluency in silent reading. Controlled Reading should be started at 60 words per minute and, during the first year, built up beyond 150 words per minute, the usual speaking rate. Until the rate for silent reading exceeds the rate for speech, subvocalization is maintained and silent reading is more aptly described as quiet oral reading.

During the two years of the LLL Research Program, the directions in the original *Teacher's Guide* and the transitional lesson plans were apparently not completely clear as to the function of Controlled Reading because many teachers used it for both oral and silent reading. Naturally, when used for oral reading, the speeds cannot be above the speaking rate. During the second year, however, silent reading prevailed more and more as the children advanced through the cycles. By Cycle 20 no group read the Controlled Reader stories only orally, and more than half read them only silently.

In the original plan Controlled Reading was started at Cycle 9. During the first year of usage, teachers asked for easier stories in order that children might begin Controlled Reading during the beginning cycles. Accordingly, eight additional Controlled Reader filmstrips were prepared and sent to the schools in February 1966. During the second year of usage, appropriate workbook pages for each of the first eight cycles were prepared and included in the *Controlled Reading Study Guide*.

During 1965-66, reports were received regarding twenty-seven instructional groups. Teachers began Controlled Reading at 40 or 80 words per minute and advanced to 160 to 200 words per minute by the end of the year. During 1966-67, when fifty-three instructional groups were reported upon at Cycle 1, teachers started Controlled Reading at 80, 120, and 160 words per minute. However, almost everyone used the stop/start button to arrest the projection in order to allow the children to keep up with the reading. When probed further, it was learned that the children had read orally, which explained why the projection had to be stopped intermittently. The teachers reported that in about half of the cases the story was reread silently after the oral reading.

In preparation for Controlled Reading at Cycle 1 almost all of the groups had demonstrated their ability to recognize the words instantaneously in tachistoscopic exposures, but during the reading of the story when the children assimilated words in left to right progression, two of the eight words taught, "says" and "again," required hesitation for about one-third of the groups. For about one-fifth of the instructional groups, difficulty was also encountered with "gate" and "say."

At Cycle 10, speeds ranging from 60 to 240 words per minute were reported for thirty-eight instructional groups. At Cycle 20, twenty-eight instructional groups used Controlled Reading speeds of 80 to 240 words per minute. At Cycle 30, the speeds for fourteen instructional groups were reported from 80 to 320 words per minute. The number of instructional groups diminished for each succeeding cycle because of the slower rates of progress for some children. In most classes the speeds were steadily advanced, in accordance with the instruction in the *Teacher's Guide*.

The comprehension questions in the *Controlled Reading Study Guide* were evaluated by two methods. Children's completed workbooks were returned and analyzed by the EDL Research Staff. Also, teachers were asked to indicate any particular questions with which a majority of the students had considerable difficulty. A list of these findings was compiled and forwarded to the EDL Editorial Department, listing the specific questions, the number of times each one had been mentioned by the teachers, and any suggestions for revision that had been made. In all instances the teachers reported little or no difficulty in maintaining comprehension at a level of seventy per cent accuracy; by Cycle 20 the percentage of groups whose accuracy fell below this level was minimal.

During 1966-67, teachers were asked to evaluate the twenty stories from Cycles 11 through 30 for interest to their particular instructional groups. Highest ratings

were given to the stories for Cycles 14, 17, 18, 20, 21, 23, 29, and 30.

In order to facilitate the giving of feedback to the pupils regarding their responses, and to help them gain independence in evaluation of their own performance, answer keys to the comprehension questions were supplied in the back of all editions of the children's *Controlled Reading Study Guide*. The use of the answer keys varied from teacher to teacher. Some taught the children to use them and others felt it was wiser not to instruct the children to check their own work. The reasons for this were that at this early age the children did not understand the value of completing the work to the best of their ability before referring to the list of answers. Some teachers who used the answer keys found that the children changed the words which they had circled and did not report the accurate number of questions they had answered correctly. Other teachers who used them found that the children had difficulty in locating the correct key and matching the answers to the appropriate questions. Some teachers reported there was no difficulty and that the children were very adept. It appeared that more extensive use of answer keys was made after Cycle 20 than earlier in the program.

In the revised *Controlled Reading Study Guide* the answer keys were rearranged so that the ones to be used first were nearest the outside edge of the page and could be cut off without disturbing future keys, allowing the key to be lifted to the page on which the child had completed his work, an arrangement similar to that employed in the answer keys of the other workbooks.

The following two comments are typical of the reactions to Controlled Reading reported by the teachers.

The children love to run the Controlled Reader.

It is obvious that the LLL system gives each child an opportunity to develop his potential through repeated practice with the Controlled Reader. Many children spend every spare minute of their indoor recess on rainy days or free activity time after lunch, on practicing with the Controlled Reader. Part of its success, I feel, must lie with the child's freedom to control its speed and vocabulary. The children have learned to choose the stories that they have the most success with on reading. The single word on a single line Controlled Reading stories (Processing Training) are the easiest and most fun for all.

Guided Reading

Materials in which the vocabulary is correlated with that taught in the Aud-X and Tach-X lessons are Aud-X Reading Sheets, Samplers, and Anthologies. During the first eleven cycles, one Aud-X Reading Sheet which folds into a four-page leaflet is provided for use following each Aud-X lesson. Samplers are provided following the Controlled Reading lesson in each cycle from Cycle 3 through 20. Each of the Samplers is a booklet containing one story. The Samplers for Cycles 3 through 13 are paper booklets of sixteen or twenty-four pages designed to be given to the child as his own personal copy, encouraging him to start building his personal library. Samplers for Cycles 14 through 20 have heavier paper backs, contain twenty-two to thirty-two pages, and are shared by the several instructional groups in the class. Anthologies I and II are hard-bound volumes in which one story or section of poetry is designated for reading in each of the cycles from Cycle 21 through 40. Anthology I, *Tree Tops*, is for Cycles 21 through 31; and Anthology II, *Snow*

Drifts, is for Cycles 32 through 40.

Specific directions for conducting the guided reading lessons are included in the *Teacher's Guide* with emphasis on reading silently to understand the total story and reading orally in group or individual situations with the teacher to verify specific points arising out of discussions, to understand the emotional content, or to dramatize the characters in the story. The Anthologies also contain questions for discussion regarding the various stories. The attempt is made in the LLL system to teach children the different characteristics of silent and oral reading. Silent reading is to be done quickly and smoothly, reading with fluency along a line of print at an even pace. Oral reading is to be done with expression in order to convey meanings by inflections, pauses, and varying pacing appropriate to the content, as used in speech.

During the first year of usage in the LLL Research Program, schools were supplied the Samplers for Cycles 3, 6, 8, 11, 14, 17, 20, and Anthology I. When most teachers reported that additional reading material was necessary in order for the children to retain the words presented in the Aud-X and Tach-X lessons, the Aud-X Reading Sheets for the first eleven cycles, in their revised expanded structure, were written, printed, and sent to the schools during February and March of 1966. At this time of reorganization of the early cycles in the LLL system, plans were made to add Samplers for each of the remaining cycles to Cycle 20; these were written and printed in time for distribution during the second year of usage, 1966-67. Anthology II, *Snow Drifts* was also available during the second year.

The thirty-eight Aud-X Reading Sheets filled a real need and were received enthusiastically. During both years all responses to them were highly positive.

Many thanks for the Aud-X Reading Sheets, a real step in the right direction. The fact that actual reading material was limited to their individual books and a couple of small leaflets really had been upsetting me. They also relieve some of the teacher load of making charts, etc.

Material in Aud-X Reading Sheets just excellent. Children learn rapidly and with enthusiasm.

Aud-X Reading Sheets working fine.

The additional Aud-X Reading Sheets received this week have been enjoyed by all children. For those who are the slowest, they have provided an excellent boost to reading.

The Aud-X Reading Sheets are meeting with much enthusiasm. Those who could not read them earlier are now able to read fluently enough to also enjoy them. Is there any hope of getting more of these beyond Cycle 11?

The Aud-X Reading Sheets continue to be most useful.

The Aud-X Reading Sheets are helping to reinforce vocabulary, especially for those who spend leisure time at home. Interest in these sheets is wide.

Teachers commented at length on the eighteen Samplers. In spite of the fact that two teachers thought that, rather than having individual books for each child,

they would prefer to have the stories combined into hard cover books with additional color, the reactions to the Samplers were overwhelmingly positive.

The books they can keep are prized possessions, which explains why none are willing to loan me a copy.

Very good for beginning readers.

These the pupils (and parents; also older brothers and sisters) love. They have been a great help.

New vocabulary easily figured out from picture clues.

Children have had a feeling of success when given these booklets to read.

Excellent.

The children are so happy to be able to take the booklet home to read and keep as their own.

A frequent question is: "What's the name of the next Sampler booklet?"

Very easily read and handled by the advanced students.

The children enjoyed these and looked forward to getting them.

Stories are just the right length to be finished in one sitting.

We thought they were very good.

They have been able to use skills previously taught to them.

They have been a delight.

Spacing order is excellent. Keeps interest high.

While reading "The Missing Fish," none of the children knew what "made his mouth water" meant. They said, "Don must be sweating because it is so hot!" The vocabulary so far has been quite similar to their speaking vocabulary with the exception of "rainbow, flowers, girl, and house" which seem to crop up in all their language approach stories dictated to me. There has been a sustained interest in elephants and lions.

Sampler booklets are all better than any basal materials.

Especially enjoyed "Circles, Squares and Colors."

I like the booklets because the pictures do not give as many clues as basal readers. "Circles, Squares and Colors" is excellent for the slower readers because they too find this one easier and faster to get through.

"Circles, Squares and Colors" easy for them to read. A challenge, but not beyond their growing edge. This booklet has exactly the right amount of words for the number of pages in the book, and seems to be perfect for all in the class. It allows especially well for attention span differences.

Capture the interest and contain food for thought. Stimulate conversation and many of the humorous situations create problems for class discussion.

The children can hardly wait to get their next new booklet.

Stories held interest of child.

"What Is a Lion?" is an excellent booklet—children highly motivated to read it. Many are moving ahead to sound out the words all by themselves. All seven in this group made a concentrated effort to master it silently at their seats first.

"What Is a Lion?" I need 4 or 5 assistants (student teachers? parents that are retired teachers?) for individual reading listeners. The children don't want to go out at recess or noon, but all want to stay in and read to me.

They are excellent short stories.

They are much more interesting than the traditional readers I have been acquainted with.

The new books are delightful! The problem is, we need more teachers to listen. Many more wish to read every day than we have time for, and to alleviate the problem, we asked for student teachers—we received none. The possibility of having parents come in is being formulated.

The individual reading program is meeting all the children's needs. The booklets are delightful.

Because the Anthologies are scheduled for use with the later cycles of the LLL system, in 1966-67 five classes did not use them at all and another one barely started in *Tree Tops*. Also, the Aud-X lessons were not available for use for Cycles 31 through 40, and only three classes reported use of the program beyond Cycle 30, the part of the program for which Anthology II was intended. The books were, however, well received by those teachers whose classes were able to make use of them.

Pleased with content and organization in "Tree Tops."

Children like variety, hard cover, and length.

Choice of stories is very good.

Variety of poems is good.

Questions at the end of each section are excellent.

The format is beautiful, and it is truly a marvelous book.

The children love to do the dramatizations suggested in the book.

We need more books of this type in the district.

I have put "Tree Tops" on display often, and the visiting teachers and parents always make pleasing comments about it.

Stories are probably the very best written in the industry for first grade.

A wonderful booklet enjoyed by all and used constantly.

Congratulations! "Snow Drifts" is another step of enrichment past "Tree Tops."

Selections of stories and poems in "Snow Drifts" excellent.

Independent Reading

In addition to the guided reading materials designed to be used at specific points in the program, independent reading in library books is strongly encouraged in the LLL system. In order to facilitate independent reading, a classroom set of sixty books called the Carousel Library is a part of each regular LLL installation. Also provided as integral parts of the LLL system are My Reading Record, Words to Know Pads, and Reading Record Folders.

Carousel Library--The Carousel Library consists of two copies each of thirty titles, written especially for the LLL system. These books are divided into three groups of ten titles, Groups A, B, and C. A Carousel Library Teacher's Guide gives a synopsis of the story and points of information regarding the literary content or background for each book. Skill Cards list words that may require teacher assistance and also include questions regarding the content of the books. They are intended to be used by both the teacher and the children in their discussions.

During the first year of the LLL Research Program, the Carousel Books were still in preparation. In substitution, two copies each of seventeen Random House Beginner Books were sent to the schools.

During the second year, Group A was supplied to the classes at mid-year. Near the end of the second year the teachers responded to a questionnaire regarding reactions of their pupils to the books in Group A of the Carousel Library, a summary of which is shown in Table 13. The most popular book proved to be *Hector, the Dog Who Loves Fleas*. *Street Dog* gained the strongest emotional reaction, that of sadness. The children loved the illustrations in *Hiccup Hippo*, *A Sunday in Autumn*, and *Hector, the Dog Who Loves Fleas*. The books stimulating the greatest discussion were *A Helicopter Can Be* and *Hiccup Hippo*. Some specific comments on each of the stories follow:

Hector, the Dog Who Loves Fleas

Much identification with Hector. All wanted Hector to keep all his flea friends; they thought he could find a hiding place in the house and play with them all the time.

Liked the illustrations. Pictures simple and clear. The children loved the fact that the fleas could be seen.

It has appeal even to the slow reader who memorizes and does not forget story.

Liked illustrations; thought it was funny.

Short and easy—good for confidence.

It is so humorous.

Easy reading. Children loved the humor.

They liked the humor.

Easy; fun illustrations; fun story, humorous.

Children thought it was very funny.

Missy and the Mountain Lion

Exciting story.

Reflected children's reactions of own experiences in mountain areas.

Sorry for the mountain lion when it fell over cliff.

Excitement and anxiety.

My Daddy Lost His Job

Little or no reaction.

The children didn't like the story; it wasn't very meaningful to them.

Didn't like the title; thought it too sad.

Some did not understand.

They were just not interested.

Similar experiences in their family have been unhappy ones.

A Helicopter Can Be

Thought helicopter is dangerous.

Just not too interesting to girls.

Creative stories followed reading of book.

A Sunday in Autumn

City park difference in East-West autumns.

Children just did not like.

Interpreting colors to sadness or happiness is good. Colors become more alive to children if they can associate feelings.

They all agreed boy felt sad along with the trees and leaves.

Liked the illustrations.

Illustrations very good.

Picture and poetic expressions especially appealed to many of my children.

In the discussion the children talked about sounds they hear in the different seasons—the songs of robins in spring, the chirp of crickets in autumn, etc. They made pictures of their favorite time of the year, and found poems for different seasons.

My Street

Described their own street.
Needed explanations of stoops, subways, alleys, underground rumblings.
New York-type book.
Subject matter and pictures foreign to our California living.
Realized what the street meant to the boy.
Thought pictures were not very pretty.

Street Dog

Children didn't understand "in a voice his father sometimes used."
Thought Barnaby should not but did not see why he did.
Appealed to both sexes. Several remarked on the sadness in this book and enjoyed it.
Would have offered their home to Ralph.

Tool Chest

Children confused on three kinds of tools.
Above level of understanding. Had to sound out so many of the words, then didn't know what the word was.
Vocabulary seemed difficult and theme less appealing to children.
They were not familiar with many of the tools and have very little access to them.
Dull; too hard for some; only appealed to very few boys.

Hiccup Hippo

Chosen most often because of attractive illustration and good story.
Liked Hiccup Hippo's red face and the vivid colors of the other animals.
Had own suggestions for curing hiccups.
Enjoyed story.
Good humor.

Kinji Goes Fishing

Good.
Well used.
Depending on child, different questions were asked in addition and/or instead of questions on Skill Cards.

TABLE 13
NUMBER OF TEACHERS REPORTING REACTIONS OF PUPILS TO CAROUSEL LIBRARY, GROUP A, 1966-1967

Carousel Library, Group A	Chosen Most Often	Chosen Least Often	Elicited Strongest Emotion	Elicited Least Emotion	Illustrations Favorable	Illustrations Unfavorable	Stimulated Most Discussion	Stimulated Least Discussion
Hector, the Dog Who Loves Fleas	10		1		4		1	
Missy and the Mountain Lion	1		3	1	1		1	
My Daddy Lost His Job		3	2					5
A Helicopter Can Be		1		1	1		4	
A Sunday in Autumn		1			5			1
My Street		1				1	1	
Street Dog			5				1	
Tool Chest		6		5				2
Hiccup Hippo	3				5		4	
Kinji Goes Fishing							1	

The Carousel Library is designed to provide application of skills of word analysis, comprehension, critical reading, and creative reading. In regard to use of word analysis skills, the teachers reported that twenty-six words used in Group A of the Carousel Library could not be unlocked independently by half or more of the children in their classes. All except one of these words, "Momi," the name of Kinji's aunt, had been listed on the Skill Cards as difficult ones with which the teacher should help the children in preparation for reading the books.

The Skill Cards, containing "What," "How," and "Why" questions, were provided to assist in building comprehension skills. Eight teachers reported that their children could use the Skill Cards independently without teacher assistance. The cards were used in group discussion, alone by individuals, as previews before reading the books, and for checkup after reading the books.

My Reading Record.—My Reading Record provides space for the child to list the books he reads and for the teacher to note her comments or the words with which the child has difficulty. Reports on the use of My Reading Record indicate that they were extremely popular with the children and their parents, stimulating a real pride in accomplishment. Teachers reported that they were used regularly in the teacher-pupil conferences. Some of the teacher comments were:

We started using the Reading Records right after the Christmas vacation. A new interest in reading stories began and it continues to increase.

The student chooses his own selection, is so happy and proud to be able to read the story and record having read it in the folder.

Several comments from parents have expressed delight with their child's interest in reading and the noticeable improvement in the reading ability.

I enter my comments and also comments from parent.

There is satisfaction and pleasure for the child as he records the name of the book or story he has read and reviews the previous titles on the page.

Since My Reading Record was favorably received as originally prepared, it was not revised.

During the first year, 1965-66, several teachers wrote that their pupils were reading a far greater number of books than any other first-grade class they had ever had. One instructional group of eight children who had finished Cycle 25 had read both the primer and first reader of nine basal series which included those published by Scott Foresman, Ginn, Row Peterson, Harper & Row, American, MacMillan, Singer, Charles E. Merrill, and Houghton Mifflin. In all, the children had read about forty books each, counting both readers and library books. In another class the teacher told of placing fifty new books on the shelves along with the others the pupils had, and that all but one or two of the books were checked out by the children that same day. Another teacher sent detailed lists of all titles read by each child in her class; all but four of her twenty-five first-grade children had read more than fifty books each, the six children reading the greatest number of books had read 62, 72, 86, 102, 183, and 185 in addition to LLL books.

For 1966-67, seven of the LLL teachers reported on the number of books read by their pupils, as shown in Table 14. Three of the project teachers listed only the books read independently, two teachers listed books included in the program as guided reading texts as well as those books read on their own. Two of the teachers simply reported the highest number of books read by a child in the class.

TABLE 14
NUMBER OF BOOKS READ BY LLL PUPILS AS REPORTED BY TEACHERS, 1966-1967

Project Number	Number of Children	Total Books Read	Average Number Read Per Child	Lowest Number Read by any Child	Highest Number Read by any Child
203	28	920	33	19	41
207	29	1,230	42	27	54
224	33	not reported	not reported	not reported	132
225	16	134*	8	1	20
227	25	235*	9	0	22
228	21	not reported	not reported	not reported	67
229	25	371*	15	4	35

*Independent reading only

Words to Know Pads.—The Words to Know Pads were used to list words which required additional study or new words encountered in the reading of general library books. The small pages from these pads were kept at hand constantly for work at school or at home where they provided a ready reference for the parent who gave his child individual tutoring.

Some comments from the teachers were:

Good way to begin analyzing words and relating them to ones already known. Gives child something to achieve in a meaningful way. Gives teacher an idea where to begin further reinforcement and another cue to the skills, missed elsewhere, which need to be developed.

When the children read silently at their seats, they kept a list of unknown words. I went over the words with the children later.

To list new words to be studied at home, or when a child needed help on a word, he would list it and wait for help when I was able to help.

Children who read better and more could use them, but those who read less, made less use of them.

Used them daily; as the children read independently they would write an unknown word. Later they often discovered the word independently, or with help from another child or the teacher.

The teachers reported that this item was useful, and it was retained in the original form.

Reading Record Folders.—The Reading Record Folders are similar in construction to file folders and provide a permanent record of information regarding the child's progress in reading at various stages in the program. They are designed to be used during teacher-pupil conferences and as a reference for parent-teacher conferences.

The evaluation by the teachers of the Reading Record Folders indicates that they were generally useful but sometimes duplicated records employed by their particular school. Some teachers indicated that it was difficult to determine whether the children had attained the specific comprehension skills listed in the folder. Teachers who made regular use of them reported that they were particularly valuable for parent-teacher conferences. Some teachers used them almost daily and filed samples of children's work in them. Teacher's comments were:

Fine folders.

Very useful.

Easy and concise way to keep individual record.

Do take up a lot of time.

I have not used them.

Very difficult to check the children on every skill listed in the folder.

Good if you can find the time to keep making the notations in them.

If I had my choice of the items to be purchased for the program I could do without these.

Generated new interest in reading and it continues to increase.

Very complete and detailed.

Extremely good for parent conference time.

The Reading Record Folders have been retained without revision in the LLL system.

In evaluating the benefits of the teacher-pupil conferences regarding independent reading, the teachers highly endorsed their use. The only difficulties encountered were in the supply of library books for the children and the lack of time to listen to the children read. The teachers expressed their reactions in these comments.

I seldom have free recesses because the students beg me for private conferences for individual reading as fast as they finish a library book which is "all the time." When I try to change the rules, such as just reading a favorite part instead of the whole book, they get mad. Ann said, "That wrecks it." The harder I try to wean them into independent reading, the harder they try to maintain the status quo.

Some walkers arrive early and sneak into the room to get a private conference for reading before the others arrive on the bus!

Bill's oral expression in reading is improving. He tried the Lion book before he was ready and learned a valuable lesson in patience and individual differences. His word attack is not as good as it should be. After a rather long lapse of time (2 weeks) during which time he didn't ask to read to me, I called him up for a conference and told him, "I know you are ready, why not today?" He stumbled at first but by the end of the book and with a lot of encouragement, he read it fluently. This experience might not have turned out so well in a "group basal reader situation," because no one heard him stumble except me, and he knows I have faith in his ability. He's reading on his own again.

It is fortunate that my own personal library is large, as the children never seem to have enough books. It is so delightful to see that the entire class is trying "I Can Read" books, but some of them are so mediocre. We spend at least two hours a week making our own cards and signing books in and out. Our room does not have the use of the school library in first grade, except through teacher sign-out. I would prefer that they pick out their own, and I could make a lot more books available for them if we had a scheduled time in the school library.

I have never had so many children so interested in library books so early in the year. There is high enthusiasm for reading in general.

This "encouragement bit" is dynamite. First graders seem to need a lot of it to keep them reading in their spare time. The danger, of course, as I perceive it at least, is that they are working for me and for that praise instead of for themselves. The more I explain to them that they won't always have me to read to, and that I would prefer that they read for their own enjoyment, the more they resist any changes I make in that direction. There is not time for them to each read an hour to me each day but that would please them and keep them all going. Many in the class do spend a lot of time trying to read various library books silently at their seats, laboriously writing long, long lists of "words to know" on their white pad of paper, but most give up in disgust after a short while unless I find the time to "hear them read."

I enjoy the individual reading, as it enables me to encourage each child personally. The machine being as defective as it is, however, does not enable me to work freely apart from the Aud-X group. A distinct time handicap.

Related Language Arts

Materials for language arts activities related to reading supplied in the LLL system are: Hear and Hear & Read Games, Word Cards, Flash-X Words and Word Study Discs, My Word Book, and My Skills Sheets, in addition to those materials used for independent reading activities.

The Hear and Hear & Read Games and the Flash-X Words and Word Study Discs have been described and the findings discussed in the Readiness section and the section on Tach-X Word Recognition respectively. The Word Cards, which contain the basic vocabulary taught by the Aud-X and Tach-X were not evaluated. The findings for the remaining related language arts materials are described below.

My Word Book.—My Word Book is a consumable reference dictionary book which the children use in creative writing activities. The alphabetical tabs contain pictures illustrating the sound of the letter in initial position of the word name. Many utility words are listed with their variant endings with illustrations and with contextual sentences to convey the meaning of the words. A blank page for each letter is also provided, in which the child may enter words which he finds he needs to spell during his creative writing. My Word Book was supplied to the schools during the second year of the program.

The teachers reacted very favorably to this book as reflected in their comments:

I would like to congratulate you on a beautifully done book, My Word Book. Just wish we had received it earlier.

Attractive and durable cover.

Good use in creative writing.

Good for the top readers. They use them faithfully.

Slower kids had trouble.

I don't see how we will use it for spelling lessons. Not enough time in one hour.

I'd like to see more of the words that are presented in the Cycle Lessons appear in the book.

I'd like to see irregular verb forms included with root verb.

Most beautifully done book of this type I've ever used for a first or second grade.

Have always felt use of a dictionary should be started in first grade.

Attractive and well organized.

Excellent for learning dictionary skills and the alphabet.

My Word Book was retained in the LLL system as originally produced.

My Skills Sheets.—My Skills Sheets are of two types: Evaluation (E) Sheets and Reinforcement (R) Sheets. One E Sheet containing four sections is used at the end of each cycle to assist the teacher and the child in determining whether the skills taught in the cycle have been adequately learned. In cases where reinforcement is needed, a corresponding R Sheet is available for each of the four sections of the E Sheet.

The teachers reported that they contained instruction in very important skills but that the children had great difficulty in completing the exercises, needed constant teacher supervision, could not be used for independent skill reinforcement, and, in some cases, produced a high level of frustration. Upon the basis of this feedback and the specific suggestions made by the teachers, My Skills Sheets were completely revised and prepared for all cycles.

General Evaluations

Several of the teachers, principals, and supervisors gave general evaluative comments on the LLL system, reflecting their experiences of usage. In spite of the frustrations caused by the experimental model of the Aud-X and the inherent extra work of participating in a research program, their comments point up the many positive features of the LLL system.

All in all, at this point, (last of January) the whole class is enthused, encouraged and moving ahead, despite the lack of an Aud-X, and if I'm not too optimistic and prejudiced, it looks like they are surpassing their peers in the other first grades in our school. Hooray for EDL and dad-drat the Aud-X!

By January some of my children really blossomed under this program. One who is particularly motivated, experienced some difficulty earlier. The independent child does very well under this program.

There has been a spurt of growth on the part of all of the children this week (first of February). It is the first time I have been sure that they are well ahead (even the slow readers) of the traditional basal reading program. In fact, they are exhausting me with their enthusiasm. EDL should run a rest camp for those of us that need it, namely ME!

An enthusiastic spirit of willingness pervades the room, and although it is noisy, it is not static and there is a lot of learning going on all the time. I am not confident that the amount of noise we make in our room is popular with the rest of our school. We are fairly wild with enthusiasm and zest for learning. Except for the flu outbreak in the last two weeks, we have had almost perfect attendance which is unusual for first grade. I'm afraid these kids aren't even going to take time to get the measles and chicken pox this year.

The children have more freedom to move around and learn what they themselves select, than ever before in my room. As a result, I think that more potential is being released than ever before. Sometimes, they are so noisy that they exhaust me but their enthusiasm is great.

A new girl from another school in our district is assimilating the LLL program rapidly and with much success.

We'd like to see the total LLL program developed for at least the primary grades. Are you thinking in this direction?

Oral reading is very good and questioning shows good comprehension. Children read smoothly, and attack new words successfully. I am very happy with the entire program and am sure that results will be very fine at the end of the year. There is little question in my mind about the extensive vocabulary these children will have at the end of the school year. I have had extensive experience in using many reading programs and feel that LLL has many superior features.

Again, may I say that we were pleased with the reading achievement. The pupils are the best prepared in reading of any class I have ever instructed in thirty-five years. There were many very high scores; 3.5 to 4.0, in fact nearly half of the class. I did follow the manual carefully and the program as set forth in it. I was often distressed with the mechanical failure of the Aud-X but if asked to repeat the program, I will not say "No."

I see a terrific improvement in the program this year.

Just finished reading Theories of Instruction, National Society for the Study of Education 1964 Yearbook—Much of what they have to say about programming I agree with after using your machines.

This is to inform you that we are seeking employment elsewhere because the prospect of returning to basal readers is too disagreeable. We've all learned much from your excellent program.

Provisions for talking, conversation, and exchange: The stories and experiences related to their lives so talking and conversation was easy.

Provisions for listening: The program gives a good start to children by stressing the listening area. Repetition is used to ensure mastery. Directions are given and are a requirement for further work. Phonics are clearer on the Aud-X. Consistency of presentations was especially helpful to the slow child.

Provisions for manipulation: A good variety is offered. However, I felt here again these children could have moved over the material more rapidly.

Provisions for teaching alphabet: This program introduces letter names.

Provisions for teaching eye-hand coordination—visual motor control: Very comprehensive.

Provisions for visual efficiency: All accomplished through the use of the Tach-X and Controlled Reader.

Attention span: This particular group of children was anxious to learn so it was not hard to hold their attention. It would have been easier to hold had they been allowed to read words sooner.

Materials appropriate for level: Pre-reading program seemed a bit long for our children who have had a full year kindergarten and nursery school. Much of this work could be taken care of in the spring of the kindergarten year.

Quantity of material: We had enough. Most of the material was very good. Much of it was unnecessary. The kinesthetic work seemed to be of little value to most children.

Variety of material: A good variety, material held their attention.

The single most valuable material experience to the child in the teacher's opinion was the work done with the alphabet.

We consider the LLL program one of the most promising approaches to beginning reading available today; our second-grade students who had the LLL last year in the first grade are "considerably ahead" of other students in word and sentence attack and in reading comprehension.

A new boy arrived in our room and has had a very difficult time adjusting to our program. He is bright and capable, (was "top dog" in his former class) and is the oldest at home. He was recommended to me by his former teacher who happens to be the wife of our vice principal. Unfortunately, he couldn't cope with our fluid grouping. He found the class mores excluded him because of his poor "social" behavior. There is a strong feeling of unity in the room and a delicate balance of power among the children. The competition is stiff but not unmanageable. I wish I knew how I did this, but I can't remember. I don't have to waste a minute with discipline problems because there aren't any. The new boy has been terribly frustrated because his mother has big plans for his college training and was horrified to find he was 30 pages behind in math. The poor child was afraid to work here and afraid to take papers home. Several times each day he remarked, "At my other school I was in the best group." "I was the smartest in the class." or "Where are the dumb kids in this class?" I interpreted his behavior to mean that he's having trouble cracking into our "closed corporation." He misses terribly the security of being a smart child in a top group. I explained to the parents that it was fine for him to be in the top group, but how would the others feel about being low in the lower groups! I sold my methods to the boy's father, but the mother is very suspicious of the setup in here and is considering moving him into a more conventional basal reading program. I can appreciate her feelings as he did seem lost without the "props." However, I gave him no special consideration and expected him to adjust. Yesterday, he showed the first signs of taking responsibility for his reading and math, and after a few firm reminders, settled down to "catching up" to the others. This is quite amusing to me because the class, as a whole, is not higher than average. This proves to me the harm in setting up artificial adult barriers to children's learning. We feed the "low groups" watered-down vocabulary and expect little from them and the progress shows, too. The EDL program has strengthened all of our class's reading vocabulary and certainly illustrates what "interesting stories" can do to motivate children to read all the time. I have noticed that comprehension is greater than I anticipated also. Many parents have remarked with pleasure, this same fact. FOUR DAYS LATER: the new boy has adjusted to our reading now and his behavior has corrected itself at the same time. He is enthused like the others.

IV

RESULTS OF OBJECTIVE EVALUATION

The second purpose of the study was to evaluate the effectiveness of the *Listen Look Learn* system, in its formative stage, in comparison with conventional basal reading programs. Standardized tests were used in 1966-67 to compare the effect of the LLL system used by the experimental group with that of the basal programs used by the control group.

Results for LLL and Control Groups

Results of the 1966-67 testing of the twenty-one experimental and twenty-five control classes are reported in Tables 15 through 26. Raw scores have been used in reporting test results for the readiness and achievement tests, and deviation IQ scores have been used in reporting those for the *Pintner-Cunningham Primary Test*. A comparison of means of experimental and control groups was made using a two-tailed t-test to determine significant differences.

Table 15 reports the overall results for children in both the LLL and control classes. The range of possible scores on the *Metropolitan Readiness Tests* was from 1-102. The mean score of the LLL group was 60.97 and the mean score of the control group was 61.60. The t-test showed no significant difference between the two groups. The mean IQ score of the LLL group was 105.22 and that of the control group was 106.89. The t-test again showed no significant difference between the two groups. The results of these two measures indicate that the experimental and control groups were similar in readiness for reading and in scholastic aptitude.

When the *Metropolitan Achievement Tests* (MAT) were administered in the spring, however, there proved to be a significant difference in achievement between the LLL and control groups on all sub-tests of the Metropolitan Primary 1 Battery.

The range of possible scores on the Word Knowledge test was from 1-35. The LLL group had a mean score of 25.45, while the control group had a mean score of 24.11. This difference, when the t-test was applied, was significant at the 5 per cent level in favor of the LLL group, which means that the probability of this difference having occurred by chance was only five times out of one hundred.

The range of possible scores for the Word Discrimination test was 1-35. The mean score of the LLL group was 25.92 and the mean score of the control group was 24.70. Using the t-test, this difference was significant at the 5 per cent level in favor of the LLL group.

TABLE 15
COMPARISON OF TEST RESULTS FOR TOTAL
LLL AND CONTROL GROUPS, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
LLL	446	60.97	17.37	- .57
Control	457	61.60	16.45	
PINTNER PRIMARY: IQ				
LLL	525	105.22	18.70	-1.49
Control	568	106.89	18.42	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	570	25.45	9.01	2.54*
Control	625	24.11	9.25	
WORD DISCRIMINATION				
LLL	565	25.92	8.87	2.32*
Control	627	24.70	9.23	
READING				
LLL	566	27.27	12.84	2.79**
Control	626	25.23	12.44	

*Significant at the 5 per cent level

**Significant at the 1 per cent level

In the Reading test the range of possible scores was from 1-45. The mean score of the LLL group was 27.27. The mean score of the control group was 25.23. Using the t-test, this difference was statistically significant at the 1 per cent level, indicating at the 99 per cent level of confidence that this difference did not occur by chance.

Examination of the raw score data revealed that perfect scores were made by some children on these tests. On the Word Knowledge test 73 LLL pupils and 53 control pupils, 13 per cent of the experimental group and 8 per cent of the control group, made perfect scores. On the Word Discrimination test 49 LLL pupils and 48 control pupils made perfect scores; these numbers comprised 9 per cent of the LLL group and 8 per cent of the control group. On the Reading test 36 LLL pupils and 23 control pupils made perfect scores, comprising 6 per cent of the LLL group and 4 per cent of the control group.

Tables 16 and 17 compare the achievement of boys in the LLL and control groups and of girls in the two groups. There was no significant difference between

the two groups of boys or the two groups of girls on either the readiness or intelligence test.

TABLE 16
COMPARISON OF TEST RESULTS FOR MALE PUPILS IN
LLL AND CONTROL GROUPS, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
LLL	211	59.57	17.28	- .75
Control	244	60.79	17.18	
PINTNER PRIMARY: IQ				
LLL	253	104.66	18.13	- .94
Control	308	106.12	18.62	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	273	24.83	9.31	2.21*
Control	335	23.13	9.55	
WORD DISCRIMINATION				
LLL	271	25.15	9.07	2.00*
Control	336	23.63	9.49	
READING				
LLL	270	25.64	12.38	2.12*
Control	335	23.50	12.27	

*Significant at the 5 per cent level

TABLE 17
COMPARISON OF TEST RESULTS FOR FEMALE PUPILS IN
LLL AND CONTROL GROUPS, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
LLL	235	62.22	17.40	- .20
Control	213	62.53	15.57	
PINTNER PRIMARY: IQ				
LLL	272	105.75	19.23	-1.27
Control	260	107.81	18.17	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	297	26.03	8.71	1.08
Control	290	25.25	8.77	
WORD DISCRIMINATION				
LLL	294	26.62	8.64	.97
Control	291	25.93	8.78	
READING				
LLL	296	28.76	13.08	1.47
Control	291	27.21	12.36	

At the end of the year the girls in the LLL group and the girls in the control group showed no significant difference in their achievement. However, the boys in the LLL group achieved significantly better, at the 5 per cent level, than the boys in the control group on all three of the *Metropolitan Achievement Tests*: Word Knowledge, Word Discrimination, and Reading.

Tables 18 and 19 compare the achievement of boys and girls within the control group and boys and girls within the LLL group. The girls within the control group achieved higher than the boys in the control group, at the 1 per cent level of significance, on all three tests of the *Metropolitan Achievement Tests*: Word Knowledge, Word Discrimination, and Reading. In the LLL group, the girls achieved higher than the boys on two of three tests of the *Metropolitan Achievement Tests*; the difference for Word Discrimination was significant at the 5 per cent level and the difference for Reading was significant at the 1 per cent level. There was no significant difference on the Word Knowledge test. This investigation supports other research findings that indicate that girls generally show greater achievement than boys in early reading. However, the superiority of the girls over the boys in the LLL group was less marked than it was in the control group, due to the fact that boys in the LLL group achieved significantly better than boys in the control group.

Analyses were made of the comparative achievement of children according to readiness and IQ scores which were in the extreme lower and upper deciles. The results of the group having readiness scores in the lower three deciles are shown in Table 20, of those having IQ scores in the lower three deciles are shown in Table 21, and of those having both IQ and readiness scores in the lower three deciles are shown in Table 22. A survey of the t-values of the differences on mean scores between the LLL and control groups of pupils ranking in the lower three deciles on the readiness test, the intelligence test, or on both these tests, indicates that there was no significant difference in any instance.

TABLE 18
COMPARISON OF TEST RESULTS FOR MALES AND
FEMALES WITHIN THE CONTROL GROUP, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
Males	244	60.79	17.18	-1.13
Females	213	62.53	15.57	
PINTNER PRIMARY: IQ				
Males	308	106.12	18.62	-1.09
Females	260	107.81	18.17	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
Males	335	23.13	9.55	-2.87**
Females	290	25.25	8.77	
WORD DISCRIMINATION				
Males	336	23.63	9.49	-3.13**
Females	291	25.93	8.78	
READING				
Males	335	23.50	12.27	-3.77**
Females	291	27.21	12.36	

**Significant at the 1 per cent level

TABLE 19
COMPARISON OF TEST RESULTS FOR MALES AND
FEMALES WITHIN THE LLL GROUP, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
Males	211	59.57	17.28	-1.61
Females	235	62.22	17.40	
PINTNER PRIMARY: IQ				
Males	253	104.66	18.13	- .67
Females	272	105.75	19.23	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
Males	273	24.83	9.31	-1.58
Females	297	26.03	8.71	
WORD DISCRIMINATION				
Males	271	25.15	9.07	-1.98*
Females	294	26.62	8.64	
READING				
Males	270	25.64	12.38	-2.91**
Females	296	28.76	13.08	

*Significant at the 5 per cent level

**Significant at the 1 per cent level

TABLE 20
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS HAVING
READINESS SCORES IN THE LOWER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
PINTNER PRIMARY: IQ				
LLL	70	85.27	15.63	-1.34
Control	77	88.22	10.82	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	77	14.27	9.18	.29
Control	79	13.86	8.44	
WORD DISCRIMINATION				
LLL	77	15.23	10.05	.93
Control	79	13.86	8.26	
READING				
LLL	77	14.46	9.38	- .42
Control	79	15.10	9.51	

TABLE 21
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS
HAVING IQ SCORES IN THE LOWER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
LLL	110	45.54	16.27	- .10
Control	89	45.77	15.34	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	131	18.56	9.39	.93
Control	117	17.46	9.32	
WORD DISCRIMINATION				
LLL	131	19.58	9.79	1.24
Control	117	18.09	9.07	
READING				
LLL	130	18.17	10.36	.79
Control	117	17.17	9.54	

TABLE 22
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS HAVING IQ
AND READINESS SCORES IN THE LOWER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	52	12.26	7.51	- .86
Control	45	13.73	9.17	
WORD DISCRIMINATION				
LLL	52	13.32	8.42	.04
Control	45	13.26	8.49	
READING				
LLL	52	12.86	7.33	-1.11
Control	45	14.77	9.66	

Tables 23, 24, and 25 show similar comparisons for pupils whose scores were in the upper three deciles. Examination of the t-values for the differences in mean scores indicate that there were no significant differences on the readiness and IQ tests for these groups; however, there were significant differences in mean scores on some of the achievement tests. Of those pupils having readiness scores in the upper three deciles there was a significant difference, at the 5 per cent level, between the mean scores of the LLL and the control groups on the Reading test in favor of the LLL pupils. Of the group of children having IQ scores in the upper three deciles the LLL groups achieved higher, at the 5 per cent level of significance, in all three tests: Word Knowledge, Word Discrimination, and Reading. Of those

children having both IQ and readiness scores in the upper three deciles the LLL children achieved higher, at the 5 per cent level, on the Word Discrimination and Reading tests.

TABLE 23
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS HAVING
READINESS SCORES IN THE UPPER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
PINTNER PRIMARY: IQ				
LLL	198	115.39	16.93	-1.47
Control	214	117.68	14.50	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	201	30.52	5.34	.78
Control	219	30.12	5.03	
WORD DISCRIMINATION				
LLL	197	30.80	4.92	1.60
Control	221	29.97	5.62	
READING				
LLL	198	35.41	9.98	2.41*
Control	221	33.04	10.15	

*Significant at the 5 per cent level

TABLE 24
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS
HAVING IQ SCORES IN THE UPPER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN: READINESS				
LLL	197	69.61	13.17	- .84
Control	216	70.62	11.31	
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	235	30.00	6.01	2.48*
Control	275	28.63	6.42	
WORD DISCRIMINATION				
LLL	231	30.34	5.35	2.30*
Control	277	29.16	6.05	
READING				
LLL	233	33.44	10.97	2.44*
Control	277	31.06	11.06	

*Significant at the 5 per cent level

TABLE 25
COMPARISON OF TEST RESULTS FOR LLL AND CONTROL PUPILS HAVING IQ
AND READINESS SCORES IN THE UPPER THREE DECILES, 1966-1967

Test	N	Mean	Standard Deviation	t
METROPOLITAN PRIMARY I: ACHIEVEMENT				
WORD KNOWLEDGE				
LLL	133	31.48	4.36	1.39
Control	157	30.73	4.68	
WORD DISCRIMINATION				
LLL	129	31.77	3.88	2.48*
Control	159	30.35	5.49	
READING				
LLL	131	36.91	8.91	2.44*
Control	159	34.22	9.70	

*Significant at the 5 per cent level

Table 26 summarizes the significant differences between the means for the total LLL and control groups and for the specific groupings reported in the previous tables. Of the 27 comparisons made, 12 were in favor of the LLL group, 15 were not significantly different, and none were in favor of the control group.

TABLE 26
SUMMARY OF SIGNIFICANT DIFFERENCES FOR SPECIFIC GROUPINGS
COMPARING LLL PUPILS WITH CONTROL PUPILS, 1966-1967

Grouping	Metropolitan Readiness Tests	Pintner- Cunningham Primary Test	Metropolitan Achievement Tests		
			Word Knowledge	Word Discrimination	Reading
High IQ	X	—	.05*	.05*	.05*
High Readiness	—	X	X	X	.05*
High IQ/Readiness	—	—	X	.05*	.05*
Low IQ	X	—	X	X	X
Low Readiness	—	X	X	X	X
Low IQ/Readiness	—	—	X	X	X
Males	X	X	.05*	.05*	.05*
Females	X	X	X	X	X
Total	X	X	.05*	.05*	.01*

X No significant difference

* Significant at the stated level in favor of the LLL group

Organization of LLL Classes

The provision of Aud-Xes and other auto-instructional elements in the LLL system makes possible the organization of classes into smaller instructional groups, allowing for greater individualization of instruction than would be possible without the use of such aids by the teacher. A regular installation of the *Listen Look Learn* system specifies two Aud-Xes; however, during the formative period most classes had only one Aud-X, reducing the advantage anticipated in classroom organization. In answer to a questionnaire, ten of the twenty-one teachers reported that during 1966-67 they had organized their classes into a greater number of small instructional groups than they had previously done, five teachers worked with the same number of groups as they had previously, and six teachers did not respond to this question.

Table 27 reveals that the number of instructional groups per class ranged from 3 to 6, with an average of 4.62 groups per class.

Among the groups, the membership ranged from 1 to 15 with an average size of 6.1 pupils each. Ten groups consisted of one child each.

Progress of LLL Classes

The LLL system encourages individual growth by providing for the pacing of small instructional groups or individual pupils according to their achievement in cycles of lessons. During the 1966-67 phase of the LLL Research Program there was a wide variation in the progress made by different pupils through the cycles. Table 27 shows that at the end of the school year 19 pupils, three per cent, were still in Cycle 1, while 136 children, twenty-four per cent, had reached Cycles 29 and 30. Cycle 30 was the highest cycle where complete sets of LLL materials were available. Fifty children, nine per cent, had progressed beyond this point using whatever materials were available for Cycles 31 through 40. The median cycle through which LLL pupils worked was Cycle 22, and the mean was Cycle 20.8. By the end of the year 124 pupils were still working in the first 11 cycles. Two hundred sixty children, forty-six per cent, progressed to the section of the program extending from Cycle 12 to Cycle 28.

In order to ascertain the reading achievement, as measured by a standardized test, of children using the LLL system, the grade equivalent scores for children completing a specific number of cycles were examined. The results are reported in Table 28.

Twenty-six pupils who had completed Cycles 20-22 had mean grade equivalent scores on the MAT of 1.9, 2.1, and 1.9 on the Word Knowledge, Word Discrimination, and Reading tests respectively. The 131-136 pupils who had completed Cycles 29-30 had mean grade equivalent scores of 2.2, 2.4, and 2.2 on the Word Knowledge, Word Discrimination, and Reading tests respectively. The 26 pupils who had completed Cycle 40 had mean grade equivalent scores of 2.9, 2.8, and 3.4 on the Word Knowledge, Word Discrimination, and Reading tests respectively.

The ranges of grade equivalent scores for the various groupings can be found in Table 28. It is interesting to note that in Word Knowledge and Reading the upper limit of the range reported is the highest possible grade equivalent on the MAT test.

TABLE 27
ORGANIZATION OF CLASSES WITH RESPECT TO NUMBER AND SIZE OF GROUPS OPERATING AT SPECIFIC CYCLES
AT THE END OF THE SCHOOL YEAR, 1966-1967

Project Number	Number of Children	Number of Groups	Number of Children at Each Cycle																																										
			Cycle Number																																										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
203	28	5											3																																
206	29	6																			1	1				3																		15	
207	29	5																					1					8		1														11	
208a	23	3																																											
208b	23	3																																											
208c	23	3																																											
210	21	3								6							7				8																								
212	26	4										6						8	7				5																						
214	32	6																																											
215	38	5																																											
220	28	4																																											
221	27	6	7	2	3	8	1	6																																					
222	22	4	6																																										
224a,b,c	97	14																																											
225	21	6								2																																			
226	24	4								8																																			
227	26	5								5																																			
228	27	3																																											
229	26	4																																											
Total	570	93	19	2	3	18	17	6	18	5		21	15	44	10			7	14	23	29	13	1	12	2	20	11	58	7	9	120	16		7	3	2								1	26

TABLE 28
RANGES AND MEANS OF MAT GRADE EQUIVALENTS ACCORDING
TO LLL CYCLES COMPLETED, 1966-1967

Metropolitan Achievement Tests	Number of Cycles Completed	Number of Pupils	Ranges of Grade Equivalent	Mean Grade Equivalent
Word Knowledge	20-22	26	1.5 - 3.2	1.9
	29-30	136	1.4 - 3.2	2.2
	40*	26	2.2 - 3.2	2.9
Word Discrimination	20-22	26	1.4 - 3.6	2.1
	29-30	131	1.3 - 3.2	2.4
	40*	26	2.3 - 3.6	2.8
Reading	20-22	26	1.5 - 3.9+	1.9
	29-30	134	1.2 - 3.9+	2.2
	40*	26	2.6 - 3.9+	3.4

*Aud-X lessons and other materials were not available so that these students had only parts of Cycles 31-40 for their use.

V

CONCLUSIONS AND SUMMARY

Based upon the information gained from subjective and objective evaluation of the LLL system, its components, and its functioning in the classrooms, a number of conclusions seem warranted.

1. Reports from cooperating teachers regarding the use of the LLL system with their first-grade classes prompted specific changes which were subsequently reported as being improvements.
2. The organization of the LLL system into cycles proved to be effective and was maintained; the skill building sequence within the cycles was expanded for the first twenty cycles.
3. The techniques for teaching beginning handwriting, including the tachistoscopic matching of symbol elements on window grids and the kinesthetic activities, were reported by the majority of teachers as being useful in developing the eye-hand coordination of first-grade children.
4. The materials for the readiness period were reported to be effective as they were used in relation to each other; they were all retained, some were revised, and others were expanded.
5. The four instruments employed in the LLL system were evaluated by teachers as being effective for their purposes: the Aud-X was effective in introducing vocabulary, the Tach-X was effective in establishing sight recognition of vocabulary and in reducing vocabulary recognition time, the Flash-X was effective for individual practice in recognition of vocabulary, and the Controlled Reader was effective in developing fluency in silent reading.
6. First-grade children of the LLL classes used auto-instructional techniques with increasing independence after initial periods of teacher supervision.
7. The LLL system permitted small instructional groups to progress at various

rates and the several groups to work simultaneously on several different cycles of instruction within one functioning classroom.

8. Approximately half of the LLL teachers were able to organize their classes into a greater number of small instructional groups than they had worked with in previous years.
9. Progress through the cycles of instruction for different pupils using the LLL system was widely varied.
10. Considerable independent reading was done by LLL pupils in text and library books in addition to those in the LLL system.
11. Subjecting the LLL system to usage by a relatively large number of first-grade pupils, receiving evaluative feedback from their teachers, and revising the components accordingly, has produced an instructional system for the teaching of communication skills which has evidenced effectiveness for a large number of various kinds of first-grade children.

To the extent to which subjects in this investigation were representative of first-grade pupils as a whole and to the extent to which the instruments were valid, reliable, and representative tests of reading readiness, scholastic aptitude, and reading achievement, a number of conclusions can be drawn from the standardized testing.

12. The experimental group of approximately 570 pupils and the control group of approximately 627 pupils were not significantly different in readiness for reading or in scholastic aptitude.
13. The experimental group using the LLL system made significantly greater achievement in reading on the *Metropolitan Achievement Tests* (MAT) than the control group using basal readers. On the Word Knowledge and Word Discrimination tests the greater achievement was significant at the .05 level, and on the Reading test it was significant at the .01 level.
14. Of those pupils whose IQ scores placed them in the upper three deciles of the norms scales, the experimental group scored significantly higher than the control group, at the .05 level, on all three tests of the MAT.
15. Of those pupils whose readiness scores placed them in the upper three deciles of the norms scales, the experimental group scored significantly higher than the control group, at the .05 level, on the Reading test of the MAT.
16. Of the pupils whose readiness and IQ scores placed them in the upper three deciles of the norms scales, the experimental group scored significantly higher than the control group, at the .05 level, on the Word Discrimination and Reading tests of the MAT.
17. Of those pupils whose IQ scores, readiness scores, or IQ and readiness scores placed them in the lower three deciles of the norms scales, neither the experimental nor the control groups scored significantly different on any of the three reading tests of the MAT.
18. The boys of the experimental group scored significantly higher, at the .05 level, than those of the control group on all three reading tests of the MAT; however, there was no significant difference between the girls of the LLL and control groups.
19. The girls achieved significantly better than the boys within both the experimental and control groups. However, the difference between the girls and the boys in the LLL group was less marked than the difference between the boys and girls in the control group.

20. Of twenty-seven achievement test comparisons made involving the total group and various groupings of the total sample, twelve were in favor of the experimental group, fifteen were not significantly different, and none were in favor of the control group.
21. Mean grade equivalent scores for pupils at Cycles 20 to 22, 29 to 30, and 40, increased as the children advanced in the LLL system.

In summary, it would appear that the *Listen Look Learn* Multi-Media Communication Skills System holds a potential for greater achievement in reading. Children in this study who had higher intelligence and greater readiness for reading were challenged by this system and made greater achievement using it than similar children using conventional basal programs. Boys in this study seemed especially to profit from the new system for teaching reading in comparison with boys using the traditional reading programs. In this study the group of 570 pupils using the *Listen Look Learn* system made significantly greater achievement in reading, as measured by the *Metropolitan Achievement Tests*, than the group of 627 pupils using basal reader programs.